THIS BOOK IS LOVINGLY DEDICATED TO
MY WIFE, FRANK STUART PARKER,
WHO HAS ASSISTED VERY MUCH IN THE
PREPARATION OF EVERY PAGE, AS WELL
AS IN ALL MY WORK AS A TEACHER.

CHART ILLUSTRATING THE THEORY OF CONCENTRATION.

BOOKS BY FRANCIS W. PARKER.

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PREFACE.

THESE "Talks" were given at the Teachers' Retreat, Chautauqua Assembly, New York, July, 1891.* Their popular form has been changed to text for close study. Many repetitions have been omitted, but leaving, as the reader will find, a sufficient number to maintain the reputation of an average teacher. The experience of three years has naturally brought other changes, suggesting modifications and additions.

The discussion of the doctrine of Concentration presented in this book is the outcome of work done in the Cook County Normal School.

In 1883 I resigned my position as one of the Supervisors of the Boston schools in order to come into closer range and contact with children's minds. The work done in Quincy was a slight beginning of something far better.

Of the special direction of progress, the ideal was vague—not in the clear. One thing, however, appeared right—that the natural sciences and history should be put into the primary school, made an essential part of the course for eight years; and that reading and language lessons might spring from the thought aroused from the study of the central subjects. Another proposition presented itself with great force: that pupils under proper

* They were also given at the New York Teachers' Training College, the University of Minnesota, and the Cook County Normal Summer School.

conditions could be led to govern themselves; that punishments, per-cents, and rewards were, to say the least, not necessary.

A corps of very earnest teachers went to work upon these ideas. Whatever one teacher discovered was contributed to the general treasury. Every point was discussed in our weekly faculty meetings. My first intimation of Concentration came from the principles of Delsarte in his doctrine of the reaction of vocal and pantomimic expression upon the mind; these principles were applied to all the modes of expression.

The main purpose steadily developed itself. For methods of arousing and sustaining a body of educative thought, we looked in the direction of elementary science, geography, myth, and history.

Prof. and Mrs. H. H. Straight, of blessed memory, were enthusiastic believers in science for children. Prof. Straight had learned methods from Agassiz. A beginning in science teaching was made under his guidance, and it was soon found that reading, writing, indeed all language, could be profitably taught in connection with science lessons. The same discovery was made in regard to geography, myth, and history. The first idea of the unification of arithmetic and science came from Prof. Straight. Miss Mary E. Burt assisted very much in literature. Miss Ellen Montfort began modeling, painting, and drawing as a means of teaching science, geography, and history. Miss Harriet Iredell brought to light what I consider one of the most remarkable discoveries ever made in the School—the ability of little children to rapidly write words and sentences upon the blackboard under the impulse of thought.

I could not name one of the present faculty without naming them all; each one joins in the investigations with the utmost zeal and persistence. Most of them are well known to American teachers through their books and discussions of special subjects.

No one will misunderstand these lines by supposing that the School claims originality in either discoveries or methods. The

rule is, that whatever any teacher *effectively* applies, he must discover for himself.

The psychology of Herbart, and the doctrine of Concentration enunciated and applied by his disciples, Ziller, Stoy, and Rein, have been a source of inspiration and a guide in the general direction of the work.

I must not fail to mention another never-failing source, the fundamental doctrine out of which, as a germ, the principles of Concentration are being developed; that is, the teachings of the founder of the Kindergarten—Froebel. From him we get the sublime idea of the unity of the human spirit; the unity of creation and the Creator: all life for one life, and each for all.

The faculty of the Cook County Normal School has had one great advantage: as one corps of teachers they have worked earnestly and honestly to find and apply the truth under the working hypothesis of Concentration; at every step, changes and modifications have been made, devices have been given up and new ones cheerfully accepted, materials and topics have been arranged and rearranged.

The initial steps in this work have been taken, and enough has been done to prove that the *direction is right.* The doctrine of Concentration in itself is a science of education that will absorb the attention of thoughtful teachers for centuries; it contains an ideal that is infinite in its possibilities.

The study of education as a science is imperatively demanded of all teachers who believe that the common school is the central means to preserve and perpetuate true democracy. The teacher's profession is one day to stand at the head of all professions. It will take its true place when teachers exalt it by honest efficient study of the laws of being and a wise and courageous application of the truth found.

This book is a contribution to those of the profession who see an endless vista of better things for the children. The questions appended, the contents and marginal headings, are to lead

students to a better understanding of the text, and above all, a just and righteous *criticism.*

I am more than willing to see every principle here enunciated fall to the ground under logical and convincing reason. Some one has said that the greatest invention of the nineteenth century is the "suspended judgment." I sincerely trust that in publishing this book I shall not in any way compromise my attitude towards truth by clinging to any statement here made when it is shown to be incorrect, or when something better is presented.

FRANCIS W. PARKER.

COOK COUNTY NORMAL SCHOOL, Jan. 23, 1894.

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I.

THE CHILD.

I PROPOSE in this and the following talks to present a general exposition of the theory of CONCENTRATION.

The least that can be said for this theory is that it presents to some extent an outline of a rounded educational doctrine for the study and criticism of teachers.

In the beginning of these discussions, the question of all questions, and indeed the everlasting question, is: what is the being to be educated? What is the child? What is this little lump of flesh, breathing life and singing the song of immortality? The wisdom and philosophy of ages upon ages have asked this question, and still it remains unanswered. It is the central problem of the universe. The child is the climax and culmination of all God's creations, and to answer the question, "What is the child?" is to approach nearer the still greater question, What is the Creator and Giver of Life?

What is the Child?

I can answer the question tentatively. It is a

question for you and for me, and for the teachers of the present and the future, to answer ; and still it will ever remain the unanswered question. We should study the child, as we study all phenomena, by its actions, and by its tendencies to act. The child is born, we are told by scientists, deaf, dumb, and blind, yet, in design, possessing marvellous possibilities for development. It is well for us to stand by the cradle of a little child who has drawn his first breath, and is ready to be acted upon by the external energies which surround him.

Organism Determines Development.

One hypothesis we can accept as true: the inherited organism of bone, muscle and brain determines exactly the limits or boundaries of the baby's development. Each nerve-fibre or convolution of the brain says : "Thus far shalt thou go and no farther ;" and it is well to say in the same breath that no human being ever had the external conditions for growth by which the full possibilities, predetermined and fixed by the organism, have been realized. The organism itself determines the external conditions for development. Every muscle, every nerve, every fibre, every convolution of the brain, their nature and power, are in themselves possibilities for the reception of those external energies which act upon the body of the child, and make their way to the brain through the sensorium. The child itself is a central energy, or complex of energies, upon which and through which certain external energies act. No simple energy can enter a child's brain except by first touching the child's body (the end-organs), and countless energies touch the child's body which do not enter the brain at all ; others enter, but lie below the plane of consciousness.

Forms or waves of light touch the eye and create elementary ideas of color in the brain, but just what colors there shall be in the brain is determined by the passive power and delicacy of the organism itself. Vibrations of air touch and enter the brain through the ear. Strongest and most effective of all is the contact and resistance of the body to objects more dense than waves of air or waves of ether. The great giant sense of touch begins its creative power in the brain at the birth of the child, and even before birth. It is well for us to understand thoroughly that the child, an organic complex of energies, is acted upon and through by external energies, and, whatever matter may be in itself, the mind is conscious of nothing but pure energy, and is primarily developed by external energies which, we infer, act through forms and qualities of matter. Stimuli come from all the surroundings of the child. The products of the stimuli create in the child's mind concepts corresponding to external objects. These concepts are activities in themselves, or phases of differentiated energy. Units of elementary ideas, individual concepts, enable the mind to react upon externality. The child begins to move under the stimulus created by external activities, to smile, to laugh, to stretch out its hands, to see, to hear, to touch, to taste, and to smell.

External Energies.

It is not possible for me to state the exact order of the succession of the arousing to action of the different senses. Our questions here are: What are the spontaneous activities of the child? In other words, what must the child do from the nature of its being, the nature of the stimulus acting through its body and in its mind, and the po-

Spontaneous Activities.

tentialities of the ego? What are the tendencies of these spontaneous activities? The child's consciousness begins in obscurity, weakness, and vagueness, and still in this very obscurity and vagueness there is great activity. The very few weak and obscure ideas of color and sound and form set the whole being into motion. Before there is any consciousness, before the child has the most obscure feeling of itself, music affects it in a wonderful way. Lullaby songs will soothe it to sleep, changing vague pain into vague pleasure. The whole being is sensitive to the rhythm of music. Not only can it be soothed and lulled to sleep with music, but its first dawning consciousness of life is marked by a smile aroused by a song. The first spiritual breath of external life comes with musical cadences. One of the first sounds that it makes is an imitation of rhythm. What is this marvellous gift that makes the child so sensitive to musical cadence? The whole universe moves in rhythm: the avalanche thunders from the mountain side in deep cadences; the ocean surf roars in musical cadence. The rippling of the brook and the soughing of the breeze in the foliage are the simple music of nature. The little child is the centre of all this rhythm, and the feeling of this rhythm is the truth of the universe whispering its sweet songs to the child's soul.

Music.

Perhaps the most marked mental action of the little child is the fanciful creation of new ideas and images. A little vague color and sound, and a few percepts of touch, are sufficient to set the little being into most vigorous action. External objects act upon the child and produce their correspondences, individual concepts, in its mind. As I have already said, these concepts are very vague,

Fancy.

obscure, and indistinct. Notwithstanding all this, creation is the moving, central power and delight of the child. The baby creates out of its meagre store of ideas a new world, its own world, in which it lives and moves and has its being. Let us pause a moment, and look at the marvellous meaning of this wonderful power of the child in the creations of fancy. If the little human being were limited to actuality, that is, to the vague reflex of external objects, if it were bound by its own meagre store of so-called facts, it would indeed live in a dark and dismal prison; but it bursts the bands of reality and goes out into a higher world to the invisible life. It lives over again the childhood of the race in the myth. It revels in fanciful forms of its own weak but vivid creations; it spontaneously seeks the invisible.

Creative Power.

Next to the cradle song is the cradle story. You know very well how eager a child is for stories that arouse its love for rhythm and excite its fancy. The child most delights in fairy tales, the mythical treasures of the ages. The cruel bonds of stern reality are broken, and it enters a beautiful and invisible world, peopled by creations of its own fancy. If a child were limited in its early stages to the world of reality, if it could not go out into the unknown world, the invisible world, it would lead the life of a brute. The human animal differs from the brute in its faith in an invisible world. The self-created, invisible world, to the child, is the fire-mist heaven; it is the chaos that precedes the spiritual life. Banish myth from the child, and you take away that beauty which is the essence of truth. Parents who forbid the myth because they conceive, for-

Myth.

sooth, it is not the truth, limit the child to the baldest materialism, or prepare the way for fancy to run riot to ruin.

What is the Myth?

What is the myth? The record of the human race is full of myths. Myth comes from the imperfect answer which nature gives to the childish soul of man. The answers are not false, but they are imperfect and partial, and are, to childish souls, the solution of their great problems. Every answer given to a spontaneous and innocent question contains a golden kernel of intrinsic truth. It is that truth which a child can bear in its early years. It cannot grasp precepts and logic, but it can understand the truth, like those who crowded around the Saviour,—in parables. The myth is common to all tribes and nations on the face of the earth. All myths have a wonderful similarity, proving that the human spirit in every stage of growth, and in every clime, and under all environments, has the same strong everlasting tendency upward. Every myth contains a lesson to man. Out of the ignorance of the nature of the child, and from the spirit of dogmatism and bigotry, there has come the falsehood that says the myth does not contain the whole truth, and therefore must be rejected. Who knows the whole truth? Shall the child be robbed of that which delights its soul and lays the foundation of true religious life? No greater mistake can be made in regard to the spontaneous activities of the child, for the myth is the true fire-mist of character, it contains golden symbols that point upward to God and to heaven. The myth is the foundation of faith in the future life, the foundation of all spiritual growth. The

Development of Myth in the Race.

fairies and trolls change, as the soul changes, to real folks and real life.

Myth the beginning of History.

The myth is the beginning of history. The creatures of fancy foreshadow the real people with whom the child must live. It is, indeed, the child seeing through a glass darkly, but that obscurity of truth and tendency towards it are absolutely essential to its growth. Myth, I say, is the beginning of history. The myths presented to the child should contain in themselves the guiding stars of life and immortality.

The myth is the beginning of science. The human race began, we are told, with a firm belief that every object in the universe was animated, life-like, human-like. This was the childish study of science, but it sustained a great truth. The stone and the mountain are not organisms for life, it is true, but there breathes through them an irresistible energy, which comes from the Giver of all Life. The myth of the early ages points towards the marvellous revelations of the scientific truth of the present. The myth is an imperfect and partial apprehension of truth. The myth clears away under the steady light of the ever-moving mind; it is essential to the weak state of the child. "The night veileth the morning."

Myth and Science.

Just as the human race arose in its development from the myths of antiquity, so the child must rise from the myths of childhood. The lack of ideality, the failure in spiritual growth, in true religious life, are caused more by the failure of the parents to recognize the true nature of the child and his inborn love for myth than any other cause whatever. The rankest materialism in its worst form has never struck harder blows at true

Myth the beginning of Religion.

spiritual life than the ignorance of misguided parents, who keep their child from fairy life and fairy land. Fairy land is over the border of the present, into the future, and the truest tendency of the human life is to live in the ideal of the future, to reach forward towards the invisible and the unknown. Slowly the human beings have arisen—guided by a glimmering light—and have climbed spiritually from the earth and the clod, from the shrub and tree up the broad walls of the arched sky, to stars, and moon, and sun, and then beyond the sun, for the divinity seeking and striving imagination stretches away to the invisible, all-powerful, all-controlling, all-loving, One who permeates the universe, lives in it, and breathes His life through it, the eternal life to be taken into the human soul. The myth is the obscure image, in the child's soul, of God Himself. There are many parents who shudder at the myth of Santa Claus, an invisible being that brings the child gifts; but that invisible being, to the child's weak apprehension, is the foreshadowing of the All-Giver, the forerunner of the One who came to man on the blessed Christmas night. No rough voice and no ignorant soul should ever tell the little child that Santa Claus does not exist, for Santa Claus is the foreshadowing of the All-Giver, All-Lover, the One who gives because He loves.

Santa Claus.

It is impossible to take a child into history, science, ethics, and religion without the continued exercise of these spontaneous fanciful tendencies. You may reply that a child may live in myth and fancy all its life. I admit that this is possible. Many people do live in myth all their lives just because myth is not put into the crucible of high-

Myth the Beginning, Truth the End.

est reason; just because the conditions are not presented for myth to change to history, to science, to ethics, and to religion. This is no proof that the strongest spontaneous tendency of the child is wrong; it is only a proof of neglect to build upon it. I think we can take it for granted that, as God, the loving Creator of the child, made the child His highest creation, He put into that child Himself, His divinity, and that this divinity manifests itself in the seeking for truth through the visible and tangible.

The child is brought into direct contact with its mother, its father, and the whole family, and who will dare to say that the child is not, above all, a student of human nature? Who will say that its eyes, when they touch one's face, cannot read the soul better than older people? The child looks at you with the innocence and purity of childhood, and no hypocrisy, no dissimulation, though it may veil the truth from older eyes, can keep it from the little ones. It studies the relation of being to being, father to mother, parents to children. It may be that I use too strong a word when I say it "studies," but still it is something very like study. The study of family life is the child's beginning of the study of anthropology and of history. The child is not only a student of individual life, but of community life, the life of the family, the life of the neighbors, of the children he meets at play, in the house, in the yard, in the street; and the measure of the child's judgment of community life is the measure in its after study of history. It may study history in school or the university, but in all life the judgments formed at home, in the nursery, in the parlor, in the kitchen, in the street,

The Child Studies Anthropology.

The Child and History.

are the strongest, ever-enduring measures in all his after-judgments of the record of the human life taught by experience and in history. Every human being with whom he comes in contact is a new study to him. The looks, the manners, the dress, the attitude, and the facial expression lead him to make his childish inferences. Then comes the kindergarten and the school, the first step in a broader community life than that which home furnishes. Here, the study, not only of history, but of civics, begins. The true foundation of civics is community life. The child's home measure of life, the government of his home, give him democratic, monarchical, or socialistic principles. Whatever the rule of the home or school may be, that rule is ever afterwards either loved or hated by the child. Thus the child spontaneously begins the study of anthropology, ethnology, and history, and in these studies he has a profound, abiding interest, in these studies he forms habits of judgment which to a great extent are fixed and permanent.

Zoology.

It needs no argument to prove that the child studies or, at least, is exceedingly interested in zoölogy. Few beings, except, perhaps, the father and mother, can interest a child more deeply than the brute life which surrounds him. The cat is "a thing of beauty and a joy forever"; the dog is its particular friend. It stretches out its little hands before it can speak, and its first utterances follow the attempts of its original ancestors in imitating the voice of the dog. The child delights in birds, butterflies, and bees. Place any moving, living thing before the child, and it moves towards it with an excited interest. It wants to touch it, to

stroke it, to know more about it. Endowed with the original idea of animism, it no doubt believes every brute that it sees to have a mind like its own. It will imitate the dog, the cat, and the birds, and will talk to them as to its own companions. He studies zoölogy in that he becomes acquainted with the animals he meets: every insect, every animal, wild or tame, the grasshopper, the locust, bugs that scurry away when he lifts a stone, the fish-worms which he digs for bait, are objects of intense interest. He knows the difference between the white grub and the common earth-worm. The animals in the woods are his friends. The birds, their habits, their nests, their little ones, and their songs fill him with joy. He can take a lesson from the timid partridge, who is ever ready to give her life for her children. He knows the sly habits of the crows, studies the psychology of their reasoning. The horses, and oxen, and sheep are all his friends. What farm-boy has not cried over the loss of a favorite sheep, taken away by the cruel butcher?

The child has a great love for vegetable life. There never was a child that lived who did not worship flowers, reach out for them, desire to hold them in its hands, gaze at them, and smell them. Of course, the spontaneous activities of the child are governed to a great degree by its environment. Take a little boy with the environment of a farm, —such an instance comes to me,—a boy upon a rocky farm in New England. He studies spontaneously his entire environment. It is safe to say that he knows every plant upon the farm, every kind of grass, every weed. He comes in direct contact with worm-wood, sorrel, rag-weed. He

Botany.

can tell all the kinds of grass from the graceful silver grass to the stately timothy. He knows the mosses and lichens that cling to the rocks and carpet the marshy land. He knows the shrubs and bushes; the huckleberry-bush is his delight. The strawberry in the rich meadow he watches from blossom to fruit with a keen sense of the joy which is to follow. Every tree he knows—the magnificent pine, the stately maple, the spreading chestnut in the pasture. He can tell you the shape of the tree; its trunk, its foliage: its fruit he spontaneously classifies. Thus, every child is an earnest, indefatigable lover of botany. In his future life, the farm-boy carries his botany of the farm with him wherever he goes. He compares all other plants and classifies them according to the spontaneous classifications made on the farm. He says: "This was on the old farm; this was not." "This is something new." "This is like something I've seen before." "This bush is like the lilac; this rose is like the rose in the old garden."

Comparisons.

Not only is the boy on the farm a student of life, but he extends his study to the forces of earth, and air, and water. The earth touches him, heaven bends down to him and asks him questions. The clouds he knows, from the rounded thunder-head to the mackerel sky. He knows also the winds; he can foretell the weather. He looks with intense joy to the next rainy day; that will bring him rest, or, something better, fishing. He watches the sun with a deep interest. It will be a very stupid boy who cannot tell exactly the noon hour by the sun, aided by that internal monitor, his stomach. Winds, clouds, air, and heat, everything

Physics.

Meteorology.

that influences vegetation, come within the mental range of the farm-boy.

Mineralogy. Mineralogy, especially upon a rocky farm, comes very close to the boy in clearing the ground, in picking stones, in building stone walls, in quarrying ledges. Watch a crowd of children upon the beach gathering pebbles and curious stones. They are interested in the color and form of the pebbles, and may be made exceedingly interested in the origin of the different forms, if some kind, observant friend is there to continue the questions which the stones themselves ask. Children naturally take to playing in the dirt as ducks to water. The different kinds of soils attract their attention —sand, gravel, and clay. They never tire of playing in the sand, or expressing crude fancies by modelling in the clay. The changes which natural forces bring about on the earth's surface are of deep interest to children, especially the changes brought about by running water, after a rain, or the wind swirling the sand into piles. They never tire of damming up a temporary stream or changing its current, and of watching its effects when it spreads out silt, or the cuts it makes in the soft earth. The brooks and rivers are never-ceasing sources of delight to children; they watch them at flood-time, when the water spreads out over the meadows; they notice the caving in of banks, the carrying of earth by water and its deposition on the shelving shores.

Geography. Real geography, or the appearance of the earth's surface, is a subject of intense, though unconscious, interest on the part of the child. Let a boy hunt stray cows or sheep over a large farm; he soon learns to know every crook, every turn and corner in the

whole farm, every hiding-place. He knows the hills, valleys, springs, and meadows. Of all the mental pictures that remain vivid through life and are recalled with ever-renewed pleasure, are the pictures of the country surrounding the birthplace, or the house in which we lived when children. The house itself, the fireplace, paper on the wall, furniture,—everything is distinct in our minds when other pictures fade or are blurred by time. The country round about, every hillock, every depression, brook, and rivulet are never-fading images in the brain.

The Child is Spontaneously Interested in all Subjects of Thought.

To sum up, the subjects of the child's spontaneous study and persistent interest include all the central subjects of study—geography, geology, mineralogy, botany, zoölogy, anthropology, etc. In fact, the child begins every subject spontaneously and unconsciously. He must begin these subjects, because he lives, and because his environment acts upon him and educates him. Of course, the difference in environment makes a great difference in the child's mental action, the child's individual concepts; still, in all children there are the same spontaneous tendencies. The boy, for instance, on a farm may have a large range of vegetation to study, and the poor little child in the dark city may worship with his whole soul some potted plant and from it draw lessons of inspiration and love. The child studies the clouds, the sky, the stars, the earth, vegetation, animal life, history, every hour of the day. To be sure, he may have more interest in one subject than another, but to him all these subjects are related one to the other, as the cloud is related to rain, and the rain is related to vegetation and soil. It is the tendency of pedantry to

Limitations of the Environment.

search in the far distance for facts and mysteries, but the truth is that the marvellous is close to us, that miracles are of the most common occurrence.

The Child's Physical Acquirements in First Three Years of its Life.

I wish to call your attention to the wonderful powers acquired by the child in the first three years of its life, and the wonderful persistence there is in such acquirement. Take, for instance, the art of locomotion, the creeping and walking. Watch the face of the child standing for the first time upon its little legs, attracted by the outstretched arms of its mother, who stands across the room; look at the mingled courage and fear in the baby's face. He has a great ambition to move, as he has seen others move, upon his two feet. He stretches out his arms, he fears, he takes courage, he moves one foot and is successful, and then the other; he looks at his mother's encouraging smile, takes another step, and then another, until the great feat of walking across the room is accomplished. From the time he first stands upon his feet to the time he runs around with perfect unconsciousness of his power of movement, there takes place a succession of experiments, of trials, and of failures and successes, all guided and controlled by his desire to walk.

Learning Language.

More wonderful than learning to walk is the learning to hear language and to talk. In the beginning the child creates his own language of gesture by means of his own body. He hears language, words that are in themselves complex. Oral words act upon his consciousness and are associated by a fixed and everlasting law of the mind. Idioms are acquired by hearing and association, and with it all comes an intense desire to express thought. With his voice he creates at first

his own language, which consists of crudely articulate sounds, and then follows the acquisition of the vernacular which he hears. It is well for us to consider carefully the processes of learning to talk. The child must learn to hear first; that is, the words must act upon consciousness and their correspondences must be associated with the appropriate activities in consciousness. The idioms must act in the same way and be associated with their appropriate activities or relations of ideas. Then follows the making of oral words. He learns enunciation, or the utterance of single sounds. He learns articulation, or the unity of sounds in words. He learns accent, pronunciation, and syntax, all by hearing language and under the one controlling motive of expressing his own thought. He begins, it is true, with crude utterances, but these utterances are to him the best possible expression of his thought. He learns any language and every language that he hears. If we could understand the psychological mechanical processes by which a child learns his own vernacular from the first step of hearing to the last step by which the sentence is in his power, we should understand the whole theory of learning any language. Those who have tried to speak a foreign language will readily understand something of the struggle the child goes through in order to master one single phonic element. You see that he does all this unconsciously, that all these efforts are natural and to a great degree automatic. He never for a moment thinks of a single sound by itself unless that sound is a whole word. He knows nothing at all of the complex elements of a language, nothing of slow pronunciation, nothing of syntax, still he masters the

Idioms.

The Child is Unconscious of Forms of Attention and Expression.

language by a natural process. This word natural is variously interpreted. It is exceedingly ambiguous, almost as ambiguous as the word "abstract." Still I believe that we can find a scientific definition of the word natural. If the word natural means anything, it means strict conformity to God's laws. That is, a child learns every oral word by the same law under which every oral or written word in any and every language must be learned. The child does not know the law, but he obeys the law by instinct. If the child makes these marvellous acquisitions naturally, in conformity to law, why not have him continue that conformity to law in all his after-acquisitions?

Learning to Write.

Learning to write is far easier in itself, if we follow the law, than learning to hear language or learning to speak. The great lesson to teachers is, find the law, follow the law; give the child conditions in learning to write like those he has had in learning to speak. Indeed, the conditions can be made far better, for learning to speak is left very much to accident and to desultory instruction, while learning to write may be under the most careful guidance.

Form.

It goes without saying that the child is a student of form and color. Everything that enters his brain, as I have already said, must touch the end-organs, and these attributes or objects which touch the end-organs are forms of matter. Froebel, who had such divine insight, understood the great value of the tactual sense. Color is representative in its power. It brings into consciousness the correspondences to forms of external objects.

Not only does the child study form, but he makes intuitively a systematic preparation for the

study of number. The child begins with no idea of distance. He grasps for the moon with the same confidence as he does for an object near at hand.

Preparation to Learn Number.

The ideas of distance, size, weight, are preparations for number. The child first learns to measure by constantly reaching out its hands, creeping and walking, and after that it measures distance by sight. Not only does it begin to measure and estimate distances, but it judges area and bulk, and compares different sizes, areas, weights, and bulks. The study of weight to him also has its charms, the difference of pressure upon his hand, his own weight in the effort of other children to lift him. He measures force and time in the same unconscious way, the time of sleeping, the time between a promised pleasure and its anticipated realization, and soon he learns to look at the clock to help him out in his judgment. He estimates very carefully the value of a cent and a stick of candy. All these spontaneous activities are in the direction of number study, are mingled with all his activities and are absolutely necessary to his mental and physical action. It is true these measures are very inadequate and imperfect, but they are the beginnings of the power of accurate measuring, that mode of judgment which will end, if he continues to have the right conditions, in exact measuring and weighing, and in accurate knowledge of values.

Unity of Action.

There is at first a perfect unity of thought and action. Hear the voice and watch the movements of a little child! No dancing teacher, no teacher of elocution, no actor, can ever successfully imitate the voice of the child, or the perfectly unconscious beauty and grace of its movements. Indeed it is

the highest aim of artists in acting and elocution to acquire the unconscious grace and power of a child. Listen to the voice of the child,—melodious, harmonious, perfect in emphasis, it is the immediate pulsations of his soul, the instantaneous reflex of his consciousness, with unconsciousness of his body, his organs of expression, his forms of speech. The child, until education intervenes, is a unit of action and expression, and that unity is acquired and maintained by action under a motive with no overpowering consciousness of the means or forms of expression. Must that beautiful unity be broken? Can it be perpetuated and strengthened?

The Child Full of Activity.

There never was such a thing as a lazy child born on earth. Childhood is full of activities of every kind, stimulated by external energies and shaped by internal power. The child experiments continually until it gains its ends. It will reach hundreds of times for an object, and at last succeed. What modes of expression, excepting speech, does a child acquire in the first years of its life? I should say that all children love music, though there is a vast difference in individual organisms in this as in all other modes of expression. Most children strive to imitate that which they hear in rhythm. Making, or manual work, is really the natural element of the child. I think I can say, without fear of dispute, that a child tries to make everything that he sees made. The little girl wishes to use the scissors, needle and thread. In the kitchen, unless repressed by the mother, she makes cakes and bread. In fact, the whole round of housekeeping in the beginning furnishes countless objects for activity and a desire to imitate. Boys in the shop,

Modes of Expression.

Manual Work.

or on the farm, strive to do what they see done. They harness each other in teams, they drive the dog and the goat, they make mill-wheels and dams. The tendency to imitate, the desire to make the objects they see made, is intensely strong in every child.

The Child a Born Artist.

Every child has the artist element born in him; he loves to model objects out of sand and clay. Paint is a perfect delight to children, bright colors charm them. Give the child a paint-brush, and though his expression of thought will be exceedingly crude, it will be very satisfactory to him; he will paint any object with the greatest confidence. It is very interesting to watch the crowd of little children near Lake Chautauqua, as busy as bees and as happy as angels. Let us look at the forms the children make out of the pliable sand. Here are caves where the fairies dwell, mountains, volcanoes, houses where the giants live. All these fantastic forms spring from the brain of the child and are expressed by means of this plastic material. See that little three-year-old girl with the model of a house in her brain: she is now wheeling a wheelbarrow, assisted by a little companion; in the barrow is the wood, and in her brain is the house. Energetic, persistent, happy,—in what direction? In the direction of true growth! The little girl in the kitchen is not happy until she can mould and change the flour into dough, and dough into forms for baking; and here begin her first lessons in chemistry, the wonderful changes which heat brings about. She will dress her doll, working patiently for hours. Inexpert beholders may not know what the crude forms mean, but the child knows and is satisfied,—nay, delighted. Give a

child a piece of chalk, and its fancy runs riot: people, horses, houses, sheep, trees, birds, spring up in the brave confidence of childhood. In fact, all the modes of expression are spontaneously and persistently exercised by the child from the beginning except writing. It sings, it makes, it moulds, it paints, it draws, it expresses thought in all the forms of thought-expression, with the one exception.

I have very imperfectly presented, in this brief outline, some of the spontaneous activities of the little child. The more I strive to present them, the more imperfect seems the result, so much lies beyond in the interpretation of the child's instinctive activities, so much seems to exceed all present discovery. The question, my fellow-teachers, is, what should these lessons teach us? The child instinctively begins all subjects known in the curriculum of the university. He begins them because he cannot help it; his very nature impels him. These tendencies, these spontaneous activities of the child spring from the depths of its being, spring from all the past, for the child is the fruit of all the past, and the seed of all the future. These quiet, persistent, powerful tendencies we must examine and continue with the greatest care. The child overcomes great obstacles by persistent energy, always acting with great confidence of himself and his powers. He overcomes these obstacles because his whole being is a unit of action, controlled by one motive. The spontaneous tendencies of the child are the records of inborn divinity; we are here, my fellow-teachers, for one purpose, and that purpose is to understand these tendencies and continue them in all these directions, following

Lessons Taught by Study of the Child's Spontaneous Activities.

Following Nature. nature. First of all, we should recognize the great dignity of the child, the child's divine power and divine possibilities, and then we are to present the conditions for their complete outworking. We are here that the child may take one step higher; we are here to find and present the conditions adapted to the divine nature of the child.

I have tried to show that the whole round of knowledge is begun by the child, and begun because it breathes, because it lives. If the child loves science and history, and studies or attends to them instinctively, then he should go on, and we must know the conditions or subjects and means which should be presented to him for each new demand or need.

What the Child Loves.

Dead Forms. I grant that in the past of education attention has been directed too much to dead forms of thought, and for one good reason at least: the sciences are a modern creation of man and have not yet reached the child. Now we have these marvellous subjects presented to us, worked out by great thinkers of the present, and we are to choose whether we will continue the dead formalism that too often leads to pedantry and bigotry, or whether we are to lead the child's soul in that direction which God designed in His creation of the human being.

In conclusion I commend to you, in the words of our greatest American philosopher:

> "A babe by its mother lies, bathed in joy;
> Glide the hours uncounted; the sun is its toy;
> Shines the peace of all being without cloud in its eyes,
> And the sum of the world in soft miniature lies."

I commend to you the "sum of the world" for your study, for in this direction lies all the future progress of humanity.

II.

THE CENTRAL SUBJECTS OF STUDY.

DESIGN is a fundamental premise in all that exists. There is a design in each individual being. Another term for design is possibilities to be realized. The working out of the design of a human being into character is education; the realization of all the possibilities of human growth and development is education. In the presentation of conditions for the working out of that design, or the realization of possibilities, consists the art of educating. All mental and moral development is by self-activity. Education is the economizing of self-effort in the direction of all-sided development. Economy of energy is the intrinsic mark and sign of all progress in nature and in art. Apply this fact to education: the individual being is developed by immutable laws, the fundamental law of which is self-activity; all the past, with its vast treasures, has brought us consists of better conditions for human growth, and a better knowledge of the adaptation of those conditions to each stage of development. The study of the science of education gives us a higher knowledge of the human being, and a better knowledge of the conditions to be applied. The art of teaching is the scientific, economical, adaptation of conditions for educative effort.

Brief Definitions of Education.

Economy of Educative Effort.

In this connection, it must be admitted that there is much studying, much toiling and moiling,

much persistent effort and protracted mental struggle that is not educative, because the conditions presented for self-effort are not adapted to the immediate needs of the individual. Our motive, then, my fellow-teachers, should be to economize educative effort, and with this guide we should seek earnestly for that theory or doctrine of education by the application of which this central aim of education can be best attained. The present trend of study, investigation, and discovery in the science of education is towards the correlation and unification of educative subjects, and their concentration upon human development. All subjects, means, and modes of study are concentrated under this doctrine upon economization of educative efforts. In the unification and correlation of subjects of thought and expression, each subject, means, mode and method finds its absolute and relative educational value, its definite place in the conditions for self-activity and self-effort.

Wasted Effort.

Purpose of the Doctrine of Concentration.

The unification of subjects takes for its hypotheses, first, the unity of the human being in design; second, the unity of the Creator and His creations; and third, that approximating unity of the human being to his Creator is the sublime destiny of man. "For He made man in His own image." "He has crowned him with glory and honor." Unity of body, mind, and soul, unity of educative effort, unity of action, unity of thought, and unity of thought and expression are the aims of the theory of Concentration.

Unity.

This morning I propose to discuss the unification of the Central Subjects of Study. By central subjects I mean those subjects which lie nearest the truth. All true study is the study of the Creator,

Central Subjects.

through the manifestation of His thought, in the universe and man. The central subjects of study are but the main branches of one subject, and that subject is creation. Creation is eternal; it is the manifestation of invisible, all-efficient power; therefore all study has for its sole aim the knowledge of the invisible. The highest and at the same time the most economical effort of the mind is the effective striving after the truth of creation; this action of the mind may be called intrinsic—it is the shortest line of resistance between the soul and truth. The central subjects of study represent that line, and point in that direction.

All Study is Study of the Invisible.

As a basis of my discussion of the central subjects of study, I will take the subject of Geography. You will readily grant that, in order to understand the relations of one study to another, it is absolutely necessary to define with accuracy each branch of study in itself. Through the absolutely accurate definition of one branch, it may be separated in theory, in this discussion, from all other branches, and through this separation its relations to all other studies may be understood.

Geography.

The first definition of Geography that I give is: "Geography is the knowledge or science of the present appearance of the earth's surface." This definition premises that there have been countless other appearances of the earth's surface in past æons, that constant changes have been going on in the crust of the earth, and that changes will be continually made in the future. The present appearance of the earth's surface is the result, or present effect, of countless changes in the earth's crust. Geologists teach us that the earth's creation is going on to-day in precisely the same way and

Definition of Geography.

by the same causes as it has been going on for countless ages. To know Geography is to know the present appearance of the earth's surface. This definition gives Geography a place as a branch of study and shows its relations to other studies. Any definition more comprehensive than this would include other subjects. Thus the study of the surface forms of the earth is a subject by itself, excluding, by its definition, all other branches.

Necessity of Exact Definitions.

Geology.

Geology, in its relation to Geography, may be defined as the history of the present appearance of the earth's surface, from fire-mist up through the long stages of development to the present modelled continent, ocean-beds, and islands. Present Geography is but one form or phase of countless other forms and phases of the earth's surface. Thus, the unification of Geology and Geography is not far to seek. It is the relation of effect to cause, or of present effects to a countless succession of causes. Geology is the *causal nexus* of Geography. Each characteristic area of the earth's surface, with its arrangements of slopes, counter-slopes, its river basins, plains, and mountain masses, is the product of a particular succession of changes of conditions under law, and therefore has a definite geological history. Prof. Thomas C. Chamberlin, an eminent geologist, presents this truth in a striking and beautiful way. He says (I may not give his exact words) that each special characteristic area of surface has its prenatal conditions, its birth, babyhood, adolescence, maturity, old age, decay, and death. Thus, the eye of a trained geologist reads as in an open book the stage of development of any given unit of surface, and also the long chain of changes and causes which have led up to its pres-

Prof. Chamberlin's Illustration.

ent results and its present appearance. Geography is one phase in the history of Geology. Effects may be traced to causes—causes of upheaval, subsidence, folding, extrusion, intrusion, erosion, abrasion, the removal and building up of eroded material. What book of man is like the book of the Eternal? The child may read it, the learned man may read it, and still the thought of the invisible in creation can never be exhausted.

Relation of Geography to Geology.

It may be positively stated that Geography can be in no way profitably studied without the immediate study of Geology. The human mind in its healthy normal condition must go, if it goes at all, in the search for truth, from effect to cause. The child who sees the cutting in the banks of a brook, and the rippling, rushing water making its way over a pebbly bed, must, by the tendency of his own mind, ask for the causes of the observed effects. The present effects, which his eye sees, is Geography; the cause of the effects leads him to study Geology. The child will see the crumbling bank, the carrying down of silt by the water, its deposition and spreading out on surfaces below, thus making new forms. He will not, it is true, ask at first, as he stands in the valley, what forces carved out the whole valley, but simply asks the causes of the channel and the cutting. One answer will open another question. Through the answer he may be led to discover for himself the mighty work of erosion and building, of sculpturing and constructing, in which every stream since its beginning has been unceasingly engaged. The result or effect is the valley itself, with its rounded hills and intervals of plains. This is only an illustration of the trend of all observation of surfaces. He

Effect and Cause.

Instinctive Action of the Child.

picks up a shell far inland. The inevitable question comes from the shell itself, "How came I here?" In fact, every surface and all units of surface are full of questions.

Psychological Definition of Geography.

It may be asked here very pertinently, which should come first, pedagogically, Geology or Geography? The effect must always be studied before the cause. Geography, under this definition, is a phase of Geology. To study a surface form without studying the causes which led to its formation is not to study the surface, it is an impossibility.

The fundamental product of the study of Geography is an individual concept, acquired through observation and imagination, of the earth's surface or any part of it. The Geography of any unit of surface is also an individual concept corresponding to that unit. The action of the mind in the search for causes of the present appearances of the unit of surface acts directly to enhance the concept itself.

Mere observation or a picture of the imagination would generally have for its result a vague individual concept; but as the mind searches for causes its action becomes more intense, the observation and imagination of surfaces move towards adequacy, for the good reason that the search for causes must necessarily enhance the clearness and distinctness of the effects. Thus, the study of Geology from the standpoint of Geography intensifies in a very marked degree the clearness of the individual concept corresponding to the surface. In other words, the study of Geography finds its highest and best results in the study of Geology. On the other hand, the study of Geography, or the present appearances of the earth's surface, is absolutely necessary to the study of

Opportunities to Study Geology and Geography.

Geology. The field geologist marks with critical eye every appearance of surface, slope, elevation, or depression, in order to ascertain the history of the surface.

It goes without saying that the opportunities for the study of these two subjects are countless. There is no bit of the earth's surface that is not full of the deepest interest to every child if the true teacher is there to supplement the questions of nature.

Mineralogy.

The relation of Mineralogy to Geology is the relation of matter to motion. Mineralogy is the study of the rock material; Geology, the study of the changes in the rock material. The nature of these changes is determined very largely by the nature of the rock itself. Thus, in the study of geology, the first question is: "What is the kind of material that is acted upon by physical forces? Is it archaic? Is it secondary rock? sand-stone? lime-stone?" and so on to the end of the great chapter. We take up a rounded pebble from the beach, and ask of what kind of material is it composed, whence it came, what produced the changes in it, and then we classify the pebble itself. The earth may be called with truthfulness one great rock. This rock appears in a solid or ground-up state. Ground-up rock is superimposed and forms the soil of the earth, from the coarsest gravel to the finest clay. The study of soils is the study of Mineralogy. The true study of Mineralogy is the study of that which is right under our feet—the clays, gravels, sands, and vegetable mould, over which we walk, the things with which a child comes in contact every day.

Opportunities to Study Mineralogy.

Thus we see that Geology cannot be studied

Relation of Mineralogy to Geology.

without a study of Mineralogy. What the study of timber, brick, iron, and stone is to the construction of buildings, the science of Mineralogy is to the science of Geology. Also, as is the study of the building-material to the finished structure, so is the study of Mineralogy to Geography. Geography is the study of the present appearance of the earth's surface, or the external forms of rock surfaces. Pure Geography is the study of form alone. The character of the surface, the nature of meeting slopes, river basins, valleys, etc., is determined by the kinds of minerals of which the surfaces consist and the nature of the forces which have acted upon them. Allow me to make one remark. Following the usual text-book science, there is a studied attempt at the distant, the marvellous, such as volcanoes, earthquakes, as if these subjects would excite the child's curiosity more than the marvels right under his feet of clay and gravel, vegetable mould, and wonderfully modelled forms. The real miracles are closest at hand. Enough has been said to show the organic unity of the three subjects, Geography, Geology, and Mineralogy; they exist in the closest relations, they cannot be severed in thought, except by unscientific teaching.

Relation of Mineralogy to Geography.

Change.

The thought that everything changes in this universe of ours, that there is no such thing as absolute quiescence, that differences in changes are only differences in time and differences in forces and resistance, that the planets move in their orbits, that the earth moves around the sun, that the whole earth is changing at every moment under immutable laws, that the mountains are lifted up and are ground down by ever-acting energies, is overwhelming. All is change and mo-

tion. The crust of the earth we walk on floats, we are told by geologists, upon a wavering mass. Creation is the order of progress, if we take the hypothesis of evolution that the energy which acts through the universe is becoming economized, that it acts against less resistance and therefore accomplishes higher results. Geology is the science of everlasting change written in the earth's crust; Geography is one phase of that change.

Physics and Chemistry.

There are two great sciences of change and motion. The science of direct force we call Physics; the science of more subtle changes in the rock, in the water, and in the air we call Chemistry. It seems that no argument is required to show that the studies of Geography, Geology, and Mineralogy are impossible without the essentially correlative studies of Physics and Chemistry. Geology is the science of change; Geography, one phase of that change; Mineralogy, Meteorology, the sciences of the material through which force acts in producing the change. Pure Geography is the study of the forms of the earth's surface. The earth's surface has been modelled and is being modelled under the attrition of external forces and the slow movements of internal upheavals and subsidences.

The Atmosphere.

The crust of the earth floats on plastic material like a raft upon water, yielding to its movements either in upheaval, subsidence, or folding by lateral pressure. Water forms a partial envelope of the surface of the crust, changing under heat to vapor, and condensing for lack of heat. The atmosphere is a complete envelope of the earth. That mode of motion called heat acts through air, causes its movements, fills it with invisible and visible forms of water, determines condensation into clouds and

rain, moves by air-currents the great rivers of the ocean. The atmosphere, with its suspended moisture, is the great medium through which heat acts, reacts upon the crust of the earth, changing it, modelling it, creating new surface forms. The science of heat, that physical life-giving energy, acting through air, water, and rock, is Meteorology. We may call Meteorology, also, the science of the distribution of sunshine. The products of sunshine are light and heat. Meteorology is the Physics and Chemistry of heat, manifested in air and vapor. The unity of Meteorology and all other sciences of inorganic matter seems too plain to need discussion. The main point in Geology is to discover the climatical conditions under which the different rock formations had their origin. Coal is stored-up sunshine. The observation of the effects of air and of water in all its forms in modelling surfaces makes Meteorology, Geology, Mineralogy, Geography, Physics, and Chemistry inseparable in the economical acquisition of knowledge.

Sunshine and Heat.

Definition of Meteorology.

Subjects that relate to Sciences of Inorganic Matter.

We have then the central subjects of thought that relate to inorganic matter:

Central Subjects.	Modes of Motion, or Laws of Change.
Meteorology.	Physics
Geography.	and
Geology.	Chemistry.
Mineralogy.	

These subjects which I have shown to be organically one subject, indissolubly bound or united by the very nature of the subjects themselves, may be called the sciences of inorganic matter, and the sciences of the forces which act through and change matter.

It is now our purpose to show the relation of

the sciences of inorganic matter to the sciences pertaining to organic matter, or to life. The statement may be made that the above-named sciences, Meteorology, Geography, Geology, Mineralogy, Physics, and Chemistry, looked upon as one science, the science of inorganic matter, are organically related to the science of life. These subjects present the studies of the physical basis, the environment, the support, and nourishment of living organisms. This is a relation of function, or of cause to effect. Minerals, air, and water are the materials for the physical basis of life, and also the support and nourishment of life, but failing in the great mode of motion, heat, and the consequent subtle chemical changes, there could be no physical life. Geography, the science of the surface forms of the earth, and Meteorology, the science relating to the great air-envelope of the earth, and to the forces acting through the atmosphere, may justly be called the studies of the environment of life. The function of this environment is to influence life in all its forms, qualities and modes. The study of environment then consists in observations and investigations of the energies which act through inorganic matter and influence the germination, growth, and development of living organisms.

Relation of Sciences of Inorganic Matter to Life.

Environment of Life.

Botany is the science of the lowest forms of life. How can one plant be observed without first learning its structural environment, its relations to climate, to air, to water, and to heat? Pull it up by the roots, and the questions of Mineralogy meet the eye. Geology and Geography are studies of the forms of rock material; Anatomy is the study of forms of life; Physics and Chemistry of

Botany.

inorganic matter are called Physiology in its relation to living organisms. The relations of inorganic matter to living organisms are of the closest nature. That knowledge of a plant which does not include its physical basis, its support, nourishment, and function, is of little use. I beg leave to say that I am not trying to unfold a philosophy of the natural sciences, but to show the unity of these sciences in their relations to the action of the child's mind and to his education. What the soil is, what the air is, what the climate is, what the surface is, so will be the development of the plant. Changes in surface mean changes in the support and environment of plant life. Changes in meteorological relations mean corresponding changes in plant life. The surface which receives great heat and regular rains gives us luxuriant forests; regular rains with less heat, until we reach the arctic regions, also give us forests; scanty or periodical rains, grass lands; no rain, deserts. Thus, any efficient knowledge of plant life and the distribution of vegetation depends absolutely upon the knowledge of the structure of the surface and of Meteorology.

Dependence of Plant Life upon its Environment.

Dependence of Living Organisms upon their Environment.

Each living organism is a focus of external energies which concentre upon it. The number and qualities of the energies which act upon a living organism are determined by the organism itself. The more developed an organism is, the more complex its life, the more energies concentrate upon it and develop it. In this sense, the higher the ascent in the scale of life the more dependent life becomes upon its environment, and the more it derives from its surroundings. Thus living beings, no matter how high their development, can never

be freed in this world, at least from their environment. The artist who stands on the beetling crag receives far more from the earth and air than the chamois; the traveller who is now drawn over the Rocky Mountains by a locomotive is more dependent upon physical force than the early pioneer who wheeled his barrow over the trackless plains. Human progress needs more, demands more, and takes more from nature, and in this sense is more dependent upon environment.

The limit of the line of absolute dependence of animal life upon its surroundings can hardly be drawn; it is indeed of the closest nature. The best illustration of the dependence of the evolution of animal life upon Geography and climate is shown by Paleontology. From the archaic rock up to the latest drift the record of geological periods is kept by the mineral moulds, and the remains of plants and animals found in each evolved formation. From the record of a geological period thus kept the geologist constructs in imagination the surface structure and climate of the earth, then adapted as a physical basis and environment of the living creatures of that period.

The Record of Paleontology.

The hypothesis is doubtless true of all geological periods, that the structure and climate of the earth had a tremendous influence upon both the animal and vegetable life which they sustained. If that is true of the past, and if the present structure of the earth is the result of all the former geological changes, why has its varied climate not the same powerful influence in developing the animal life that it had in any and all periods which led up to it?

No fact is more evident than the dependence of

animal life upon structural and climatic environment, and also upon vegetation. Animal life, or Zoology, therefore, cannot be economically studied without studying all the subjects comprised in the environment of life: i.e., the sciences of inorganic life and the science of Botany. We study, for instance, the skin and other coverings of animals, and the protections which they afford. The question of animal covering leads directly to the study of climate. Again, animals of the plains differ from animals whose abode is in the mountains. The camel adapts himself to the life of the desert. The same species of animals, it is true, exist in different zones and live upon different characteristic areas of land, but the modifications of different environments upon the same species are marked. Indeed, I need not take your time in discussing the intimate relation of all animal life to structure and climate. The fact I wish to make clear is that there can be no study of Zoology, worthy the name, without the study of the relations of animal life to its physical basis, environment, nourishment, and support.

Coverings of Animals.

Primary Study of Zoology.

The primary study of Zoology should consist in investigating the habits and habitats of the little folks in feathers and in fur. What animals eat, how they procure their food, the houses they live in, the homes they make for themselves, and the surroundings of their homes are subjects of intense interest to children. And, too, they not only serve to arouse the keenest pleasure, but they are at the same time the very best subjects for elementary studies. The study of the homes and environment of animals is also a study of Geography, as well as a study of Botany and Zoology.

The study of Zoology, with all that it implies in the unification of studies, is in every step a preparation for the study of the Zoology of the highest animal, man. The zoological study of man is Anthropology, and should be pursued by exactly the same methods by which the lower animals are studied. Man is far more under the influence of climate and structure, and therefore more dependent upon them, than less complex or less developed beings. Man, it is true, overcomes, commands, controls, and uses his environment. Just so far as he does this is he developed into higher stages of being. To know, then, the history of the evolution of man, we must know the environment, the circumstances, the energies, which have influenced his acts. Did he live upon grassy plains? In forests? Was he protected by mountains? Was he under the influence of burning heat or the cold of the extreme zones? What was his food, his clothing, his means of shelter? What obstacles had he to overcome? All these questions, intrinsic to the study of Anthropology, lead directly to the study of all the central subjects.

Anthropology

The living environment of individual life or community influence, all upon each, and each upon all, is next in importance to the study of structural and climatic environment. The relative influence of masses of vegetation upon the individual plant is of the closest nature. The tree in the pasture spreads its broad branches over a large space; the tree in the forest shoots up into the air with its long trunk. Thus each individual is influenced by the mass. There is also the study of assembled brute life; indeed, the knowledge of the relations

Community Life

of flocks, coveys, and herds to each other is absolutely a necessity in the study of the individual.

Ethnology.

The mutual relations of human beings, and their potent influences upon each other in families, gens, phratries, clans, tribes, and nations, opens the intensely interesting subject of Ethnology, so rich in recent investigations. Anthropology is allied to Ethnology by the intimate notions of the particular and the general, the individual and the mass. Ethnology is then the science of the influence of a community upon its members. Mutual influence is far stronger in its determination of character than structural and climatic environment; human life in itself is far more potent in its possibilities than all that lies below it and supports it. Still, as the body reacts upon the soul, so that which forms the physical basis, the support and nourishment, of communities reacts upon the assembled or ethnographic soul. Material environment, so called, is a powerful factor in shaping human life, but life itself transcends all other influences: like myths, like fetiches, totems, religions, forms of government, appear and reappear in all tribes and all peoples since the beginning, without the slightest mark of collision or mutual influences.

The Aryan Race.

Nevertheless, the stages of human evolution are in a great degree determined by the nature of countries, their surface forms, climate, flora and fauna. The vexed question of the origin of the Aryan race, of which there are at least one hundred and fifty theories, has led to the closest study of Geography and its kindred sciences, proving that without such knowledge the most protracted researches cannot arrive at a stable hypothesis.

Grassy plains have one easily determined influence, forest plains another; mountain walls have served as refuges for peoples too far advanced for constant wars. A sea-coast with protecting walls gave the Phœnicians the conditions for commerce; the Syrian desert and the natural moat of the Jordan shut in a race long enough to develop stable homes and consequent progress; embraced by the sands of two deserts the ribbon plain and fan-like delta of Egypt gave the world a mighty civilization. Wherever we look or listen, the Mother Earth and Father Sky tell their stories of the growing life of man.

Effects of Structures upon Peoples.

Ethnology in its broadest meaning comprehends History: the former has for its principal means of investigation language, literature, buildings, tools, inventions, and the results of anthropological study; History adds the written and printed records of mankind. Although History is the most prominent factor in acquiring a knowledge of the eternal laws which have controlled the spirit of man in his evolution, the real truth of printed records is hidden in a mass of prejudice, flattery of authorities, misrepresentations, superstitions, and even rank falsehoods. The subjects peculiar to Ethnology interpret and explain obscure points in History.

Ethnology.

The earth is the home of man; vegetation and animal life comprise its furniture and furnishings. Each characteristic area of surface may be called an apartment in this home. It has a definite shape, consisting of meeting slopes, of valleys, hills, and mountains, of rivers and seas. The tremendous influence of natural environment upon the evolution of tribes and nations I have already briefly

Earth as the Home of Man.

Influence of Structure.

discussed. One river (the Nile), one alluvial plain fertilized by floods, gave us, says Ranke, monotheism and monarchy. The Pindus, with its mountain spurs enclosing valleys and opening upon the sea, gave us polytheism and democracy. There can be no efficient explanation of countless differences in beings of one species without a thorough knowledge of Geography and Meteorology.

Psychological Relation of History to Geography.

But Geography has a close psychological relation to History. The initial mental action in the study of History is that of the imagination: events, architecture, cities, the composition and march of armies, points of strategy, the prominent characters, must be clearly pictured in the mind; but such pictures are ever changing with kaleidoscope rapidity in the onward-moving tide of time. Forests spring up and are destroyed; nations rise and perish; wars succeed wars; and conquests, conquests: one factor remains comparatively fixed and stable, and that is the great background of events, the stage of human comedies and tragedies, the land itself. A vivid concept of the structure of a country is the main means of binding historical knowledge into one still greater concept. Events, dates, narrations, characters, are facts mingled in hopeless confusion without an adequate knowledge of Geography. No system of mnemonics can be compared for a moment with the assistance a clear concept of structure affords to the memory of historical facts. We are thus able to follow the march of armies, migrations, the extension of empires by conquest and colonization, and retain in the mind all the intrinsic features. The study of History without the continual use of the best maps is an extravagant use of time and a waste of power.

Memory.

I hold, then, in this brief outline of a vast subject, that all these central subjects of study are in fact one subject. The child begins all these subjects spontaneously, and these tendencies, these spontaneous activities are the indications, positive, of that which should afterwards follow in education.

The Child begins all these Subjects Instinctively.

These subjects can be considered as one in several relations. First, they are related in the study of form. The universe is filled with matter. The human mind has the power to differentiate by inference one object from all other objects. Form may be called the surface limitations of a body of matter, or of an object. Even the forms of invisible bodies of matter must be known in order to make any rational deduction as to cause and effect. We began to know what colors are, when the shape and rapidity of waves of ether were discovered. We took our first lesson in sound when we measured the shape and extent of an air-wave. We shall know electricity when we can measure the form of each vibration and the time of its continuance. In fact the study of form is intrinsic to all the central subjects of study. Geography is the pure study of form, form of the earth's surface. Geology is no less a study of form, but has to do more with the direct forces which produce the form. Mineralogy is properly a study of form. Anatomy is the study of the structure of living organisms from the lowest to the highest. The form of an object is the product of energy which acted through the form of the object which preceded it and out of which it was produced. Form is the product of energy.

Relation of Form to the Central Subjects.

Knowledge of Form Indispensable to all Study.

There is another relation which binds all study

Number.

together, and that is the study of number. We can have no accurate knowledge of matter unless we know the exact size of material bodies. We must know length, breadth, and thickness; we must know weight; we must measure the force which acts through it, and know the time of its duration. Therefore number, as a mode of judgment, is common to the study of all the central subjects.

Unity of Central Subjects in Function.

There is still a closer unity in the study of the central subjects, and that is the unity of function, the dependent interrelation of the subject of one study upon the subjects of all studies. Leave out the subject of one study, and none of the others could exist. Each subject exists because the others exist. The function of minerals, the function of air, and of heat acting through air, the function of the physical basis of life to the life which it supports and nourishes, are all interdependent. Thus a knowledge of plant life is utterly dependent upon all of the other subjects of study. The same can be said of brute life and of the highest animal—man. So we can say that these subjects are bound together in function, and we can take it for granted that there is no atom in this universe, no form or body of matter, that has not its specific use, and infer that this use is the highest when it serves to develop the highest creation of God—man.

Cause and Effect.

Initial study is always the study of effects. We study effects directly; we observe and investigate effects, the form and quality of the mineral, each stage of Geology, each phase of Geography. But an effect presupposes a cause; indeed, a knowledge of effects is useless in education unless it leads

directly to the investigation of causes. Indeed, all educative study since man breathed has been the study of causes. Causes cannot be exactly known unless effects are exactly known. As is the knowledge of effects, so will be the judgments of causes. Effects are presented to the ego through the senses and by the imagination; just as they are known so can their causes be known. The hypotheses, by the thousands, that have been swept away by later investigations have been inferences from limited observation and inadequate investigation of effects. We can say, then, that all these subjects are bound together by the studies of cause and effect, or the observation and investigation of effects, and the inferences of causes.

Natural Law.

But there is another name for the study of cause and effect, and that is the study of law, immutable, unchangeable law. A law of nature can be defined as the direction of energy acting through bodies of matter. The quality of the object through which energy acts determines the quality of the energy which acts through it. We can take it as a sound hypothesis that there is one all-efficient energy which acts through matter. This matter is differentiated into bodies and objects by energy itself, and energy in turn is differentiated in its action through different qualities of matter. I repeat, the quality of the object itself determines the direction of the energy which acts through it, and changes its form and qualities. Thus we study force, and only force as an end, in the studies of Geography, Geology, and Mineralogy. We call these studies of the laws of force, Physics and Chemistry. When we come to organic life, we call the laws of energy the laws of life, or the chemistry

and physics of life, Physiology, or, more comprehensively, perhaps, Biology.

All Study is Study of Natural Laws, or God's Laws.

I would present, then, the *study of law* as the end and aim of all these central subjects of study. I would lay down the hypothesis, which can scarcely be called a working hypothesis, that there is only one study, and that study is the study of the Infinite, All Efficient Energy, differentiated in its action through bodies of matter of different qualities and properties, first the non-sensient, inorganic matter, and second the sensient, organic matter. The study of law, or the study of differentiated energies acting through matter, is the one unit of investigation. I can assert that, from the beginning, man's growth and development have utterly depended, without variation or shadow of turning, upon his search for God's laws, and his application of them when found, and that there is no other study and no other work of man. We are made in His image, and through the knowledge of His laws and their application we become like unto Him, we approach that image.

Unity of Studies.

All study is a unit; the focus of all efficient energy is the human soul, endowed with reason to know that energy, and the motives to apply it. All acts of consciousness are non-spacial, non-ponderable energy, pure energy, and the human ego infers from the presence of differentiated energies in consciousness, the nature of the matter external to consciousness, the matter through which these energies act. I repeat, my fellow-teachers, that there is but one study in this world of ours, and I can call it, in one breath, the study of law, and the study of God.

III.

FORM AS A MODE OF JUDGMENT.

Resume.

I HAVE discussed, first, the tendencies of the human mind as evinced by the spontaneous activities of the little child, and the direction of these tendencies which include in their germs all subjects of thought; second, I have also discussed the unity of the central subjects of thought, and shown that this unity consists in the study of the laws of energy which act through matter. It is now my purpose to discuss the two modes of judgment, form and number, as indispensable factors of mental action in the acquisition of knowledge, and at the same time in the development of mental power.

Space filled with Matter.

All space known to man is filled with matter —earth, air, water, and ether. Any portion of matter, differentiated and made definite to the mind by means of an individual concept corresponding to that portion of matter, may be called an object. All space is filled with objects. An object is known to the mind, and known only, by an individual concept which corresponds to it. Although this definition of an object is not complete, it is sufficient for our purpose, as we are discussing the relation of matter to mind.

We are apt to limit objects to portions of solid matter. Every object, for instance, has length, breadth, and thickness. An oral word, wave of air or ether, a sound, a note in music, a written word,

and a numerical figure, are just as much objects as a tree, a stone, or a mountain. A wave of air has length, breadth, and thickness; it has a definite shape, it occupies space, and it consists of matter.

Definition of an Object.

Any defined portion of matter, therefore, occupying space, and having a fixed boundary in space, is an object. It is true that, so far as we know, each object is infinitely divisible, and therefore each part of an object may be called an object itself. This gives the word *object* a very broad significance. Each successive wave of ether that touches the eye stimulates and arouses elementary ideas in consciousness, each vibration that touches the ear and makes the mind conscious of a corresponding sound, is an object. They are definite portions of matter, and have definite shapes. Each vibration of heat, sound, or electricity is an object. A wave of ether one eight-hundred-trillionth of a second in duration is as much an object as is a mountain mass. A wave upon the surface of the ocean is an object, and just as much an object as its corresponding form in land surface, on the prairie. Each and every object has a definite form. The form of an object is the surface boundaries of that object, or its superficial limitations. Each object is limited by a surface or surfaces.

All objects change. They are continually becoming other objects. It is perfectly safe to say

All is Everlasting Change.

that no object in the universe remains identical with itself in any two successive moments of time. The differences in changes of different objects are marked by differences in time. A wave of ether exists in one form,—as I have already said, one eight-hundred-trillionth of a second. Changes in solid material are far slower, but everything

changes; every portion of matter is becoming something else at every moment; in fact, all there is for man to study is the phenomena of everlasting change.

Matter does not change itself. I think it safe to hold the hypothesis that there is no energy inherent in matter. Matter is a condition of change, but not the means of changing. We can give the cause of all changes in matter one general term, that of energy. Physical energy acts through inorganic matter; life, the higher form of energy, acts through organic matter; and the result of these energies is a continual and continuous becoming. Let me refer again to a hypothesis presented in a preceding talk: "The qualities of an object through which energy acts determine the direction of the energy or the law of the energy." Any one act of energy causes a change in the object; that is, it becomes another object with another form and other qualities. Supposing energy to be one unchangeable, all-efficient, complete unit, we can then suppose that this unit of energy is differentiated through and by means of the qualities of matter through which it acts. Energy is known to the mind by means of the effects of its differentiation into attributes, or simple energies, which creates mental elements in the brain through the sensory tracts. Without qualities of matter, we may infer that there would be no differentiation of energy, and therefore no knowledge of energy, or inferences in regard to matter through which energy acts, possible to the human mind. The quality of an object, I repeat, through which energy acts—and energy acts through all objects—determines the direction of

Matter does not change itself.

Energy.

Laws of Energy.

that energy. This differentiated energy acts upon and manifests itself in consciousness if the organism is capable of receiving it.

All objects are being changed, we can say, continually, by physical and life forces. Each and every change in an object causes a change in the form of that object. *Thus form is the product of energy.*

Form the Product of Energy.

The qualities of an object at one moment determine the qualities of the object into which it is changed the next. We study, for instance, the development of the earth's surface. This development is manifested to us in forms and in the successive changes in forms, from the old archaic rock, up through all the changes to the geographical forms of the present. We seek for the forces and the laws of those forces which brought about the changes. We trace the change of each successive formation, the present effect and the present form, giving us a clue to the causes of that form. This is only an illustration of the study of all objects. All changes in matter result in changes in form. We follow the acorn from its planting to its becoming a mighty tree. It exists in one form, that of the acorn; then changes into another form, and then into others, each successive change demanding a new direction of energy, resulting in a new form.

Form the Supreme Manifestation of Energy.

Every quality or property of matter is known first of all by its form. I am not here saying that there are no other intrinsic qualities in matter except form; but I think we can truly say that *form is the supreme manifestation of energy*, and that without a knowledge of form, or without the power of judging form with some

degree of accuracy, there can be no such thing as educative knowledge.

If, then, all knowledge depends primarily upon a knowledge of form, it becomes a question of vast importance for us, as teachers, to know how a knowledge of form is acquired by the mind. This question I shall attempt to answer tentatively. The bases of all mental action are acquired through the senses or by the action of external energy through the sensorium. There are five great avenues for this action of external stimuli. The senses of smell and taste are not in a high degree educative. Their function is defensive,—to ward off that which is not healthy for the mind and body; and they also enhance physical pleasure. The sense of hearing is in a very high degree educative. Music in itself is of profound educative influence, but the principal mental use of sound is to arouse thought by means of symbols composed of sounds, as in oral language. Most sounds are thus representative in their action. The same may be said of the sense of sight. Great as the educative influence of color is upon the mind, its highest function is to arouse in consciousness individual concepts corresponding to external forms. The senses of smell, taste, hearing, or sight do not develop directly and immediately concepts corresponding to form; their function in relation to form is representative, and not creative.

The Senses.

Smell and Taste.

Hearing.

Sight.

The development of the knowledge of form is left fundamentally to the greatest intellectual sense, that of touch. Knowledge of form is the direct product of the action of the tactual sense. Although touch may in a certain degree be a substitute for the products of the other senses,

Touch

one or all of the products of the other senses cannot in any way be a substitute for the effects of touch. *The continued action of the sense of sight in observation cannot intrinsically enhance a knowledge of form.* It is true, classification of forms and reasoning in regard to forms are brought about by all the senses, and probably that of sight plays a most active part; but any approximation to adequacy whatever in form concepts can only be brought about by the direct exercise of the sense of touch.

Knowledge of Form the Product of the Tactual Sense.

All energies which act through matter must first touch, or come in contact with, the end-organs of the senses, before they can enter the brain over the sensory tracts. Therefore, all the senses may be truly called tactual; and, if we take the hypothesis of evolution, that all the senses were evolved out of, and differentiated from, the fundamental sense of touch, we get a clearer idea of the vital importance of the development of the tactual sense in education. Sound touches the whole body and causes vibration, though it enters the brain only through one direct tract specially prepared by evolution for the action of that differentiated mode of energy. Color, too, acts upon the whole body, with, as we are told, an actinic effect; but it only enters the brain through its special tract, the optic nerve. It goes without saying that odor, whatever it may be, touches the nostril, and that the feeling of taste is aroused by the contact of an object with the papillæ of the tongue, especially developed for that purpose. The actions of the other senses, as I have shown, are over special sensory tracts, but the tactual sense, *per se*, is distributed over all the end-organs of the body.

All Senses are Tactual.

All Senses evolved from the Sense of Touch.

The lessons derived from children who have had the great misfortune to have been born without, or to have early lost, one or more senses are invaluable. Laura Bridgman taught us the immense importance of the tactual sense, but most striking, and indeed the most beautiful, of all the examples is found in the modern case of Helen Kellar, a little girl of ten years of age (1891), who may be justly called a genius, whose knowledge is phenomenal, whose power of thought and expression is marvellous. And here I may say that the first few years of this child's life, after she lost the senses of hearing and sight, were spent in a blind, unreasoning desire to have some knowledge of and contact with the outer world. The first, futile, passionate attempts to know without any guidance made Helen Kellar exhibit the traits of a brute; then came the marvellous teacher, Miss Sullivan, who simply presented the conditions for the natural, and therefore best, action of this wonderful being. The result is as I have already said. I have never known a child of ten years of age who has the intellectual power of this poor deaf and blind girl. It cannot be denied that there are still traces in her mind of color and sound; but these must necessarily be faint, and have very little intellectual influence over her development. The lives of Laura Bridgman and Helen Kellar prove beyond all doubt that great intellectual power may be attained through the normal exercise of the sense of touch; that the products of touch form the basis of all intellectual action.

Laura Bridgman.

Helen Kellar.

Touch is the subtile sense. Its action does not excite the mind in general like the other senses, and its elements are far more difficult to trace.

Touch the Subtle Sense.

Form in matter is the supreme manifestation of all efficient energy, therefore that power which enables the mind to know form must be its correlative in education. It follows that that sense by which form is conceived or judged in the mind must therefore stand first and in a better method of education, "The stone which the builders rejected" will become "the head of the corner."

Conscious Activities non-spacial.

All conscious activities, states of consciousness, all mental action directly known to the ego, are non-spacial and non-ponderable. They consist wholly and entirely of pure energy. This energy acts through matter, and finally through the highest form and quality of matter, the human brain, and is known to the ego only as pure energy differentiated into elementary ideas or specific activities. All that is known of matter, or of the energies which act through matter, must be acquired by the action of the ego upon consciousness, and all knowledge of form, whether innate or acquired, is absolutely dependent upon non-spacial activity. The two great mysteries in this world are life and matter, and matter is the greater mystery. Matter is inferred; phases of life are known directly to the ego; that is, the ego knows itself to a limited degree. The light reflects from a wall, and the resulting waves excite elementary ideas of color in consciousness. We judge by these conscious effects that the wall is yellow or red, but the nature of the matter which causes the changes in waves of ether and produces the attributes of yellow or red we do not know.

The Two Mysteries, Matter and Life.

Knowledge of form indispensable to knowledge of energy.

A knowledge of form is absolutely indispensable to a knowledge of the energy which acts through matter, and the laws of that energy. The nearer

the approximation to adequacy a concept of form corresponding to an object comes, the higher or more valuable our knowledge of that object may be, or our comprehension of the energy which acts through that object. The more nearly adequate the concept corresponding to an external form, the greater is the mind's power to know the object of which the form is a superficial boundary. A knowledge of form, then, is the great entrance hall to all knowledge; without knowledge of form, other knowledge is not possible.

Crudeness of individual concepts

In a future talk I shall discuss to some length the obscurity and crudeness of individual concepts. The concepts produced by the spontaneous activities of the mind are exceedingly vague. It follows, therefore, that out of such crude concepts spontaneous comparison and subsequent classification must also be exceedingly imperfect. There is no education in such comparisons and classifications. These crude concepts are, it is true, the beginnings or the germs of education; but if they remain obscure and vague, the being will remain undeveloped and mentally weak.

The problem is, then, by what mental action and by what conditions may these concepts corresponding to external forms, or the judgments of form, be developed? When I discuss with you the subject of observation as a mode of attention, I shall endeavor to give some hints in the direction of the development of the fundamental sense of touch. It remains to say in this connection that the best is last; that which is intrinsic in educational value is the nearest approximation to adequacy of the individual concept. The require-

Agassiz and his pupils.

ment Agassiz made of his students, and his insistence upon long-continued observation of even the simplest organism of life, may be recalled as a striking illustration. They began to observe with crude, vague concepts, which did not contain the elements needed for the desired inferences. Only by the long-continued action of the objects upon their minds could obscure concepts be enhanced or intensified and brought to the distinctness absolutely necessary for scientific investigation.

Form as a mode of judgment.

Form is a mode of judgment. There are no external forms in the mind. The knowledge of a form is a product of mental action entirely dependent upon the nature of the brain and upon external attributes of form acting through the sense of touch. The external attributes of touch create in the brain their corresponding elementary ideas or percepts. These elementary ideas are united into individual concepts by the action of objects through all the senses, notably that of sight. The individual concepts united in consciousness are known by the ego in analysis, comparison, classification, and consequent processes of reasoning. Upon their approximation to adequacy depends the educational value of the analysis, inference, and generalization. Defective and crude analysis, comparison, classification, inference, and generalization are the inevitable results of crude and obscure individual concepts. This fact cannot be impressed too strongly upon the attention of teachers. By the ordinary action of objects through the senses elementary ideas arise above the plane of consciousness and are united or synthetized into wholes. Observation is the

Education value of form concepts.

elaboration and intensification of these individual concepts by the continued action of external objects upon consciousness.

The mind has the power to construct new unities out of sense products, new individual concepts, which are not the direct result of the action of objects. This power of the mind is called imagination. The mental process, so far as the synthesis of ideas is concerned, is precisely the same as in the ordinary action of the senses in observation. In seeing, hearing, and touching the object itself is the cause of the synthesis. Imagination is the power to synthetize or unite elementary ideas into wholes, without the direct action of external objects. The relations, however, of sense products and of individual concepts acquired by observation, to the products of the imagination, are exceedingly close. The vividness, distinctness, and intensity of the individual concepts, constructed by the imagination, depend fundamentally upon the vividness, distinctness, and intensity of the elementary ideas which form individual concepts created by external attributes and objects through the senses; the relation, if I may use the illustration, is of material to construction. The psychic elements and unities of elements are the materials out of which are constructed or synthetized the products of the imagination. As the former are in clearness and distinctness, so will the latter be. A person with crude ideas of form can never by the imagination construct anything but crude forms. Or we can state it in this way: the only educational value that crude or obscure elementary ideas and imperfect individual concepts have, consists in the fact that

Imagination.

Dependence of products of observation upon products of imagination.

Relative value of crude concepts.

they are the germs or potentialities for development. They will never reach an educational value until they are developed into clearness and distinctness. On the other hand, a good observer may not have a highly trained imagination; because this psychic material is in the brain is no direct evidence that the imagination will be exercised: however, the proof is almost self-evident of the relation of the products of the senses and of observation to the products of imagination.

Imagination the power to go beyond the sense grasp.

Through imagination we are able to go beyond the limited horizon of the senses. Sense training and sense development are the preparatory steps to this great journey into the unseen. Observation is the principal mental educative process of individual conception when the objects are within the sense grasp; imagination, the educative process beyond the realm of sense. In all the creations of the imagination, form is the primary, fundamental, and indispensable factor to mental action and mental power. There can be no reasoning, no effective study of cause, in Geography, Geology, Mineralogy, or any of the central subjects; there can be no effective hearing of language, no educative reasoning, unless the mind has the power to construct clear images. I repeat, all these images or creations of the mind are utterly dependent upon the sense products out of which they are constructed or formed.

Geometry.

As form study is the construction of individual concepts of form by the immediate action of objects upon consciousness, so Geometry is the science of imaging forms that lie beyond the limits of the senses. Geometry is the great means by which the imagination is aided in the construction

and relation of forms not directly called into being by external objects. This gives Geometry a commanding position in all the central subjects of study. For instance, Geography in itself is a science of the surface forms of the earth; the initial steps in Geology are through form, and the same can be positively said of Mineralogy.

Mathematical Geography.

The study of Mathematical Geography is perhaps the best illustration of the use of Geometry in the acquisition of that knowledge which has for its aim the distribution of sunshine over the earth's surface, and the causes of that distribution. No one step in reasoning, in this direction, can be taken without, first, the study of forms by observation, and, second, the imagination of forms which lie beyond the reach of observation. The tendency of the mind is to relate all irregular forms of objects to conventional or typical forms. Geometry gives us the typical form, as the basis of imaging the real form. Thus a river-basin may be first pictured as two slopes meeting at their lower edges. The imaging of the two slopes thus meeting is the initial step to the mental construction of any and all real river-basins.

Froebel.

I trust that I have said enough to show clearly the vast importance of form study and its intimate relation to Geometry, and the relations of both to a knowledge of the central subjects of study. I can here refer to the divine intuitions of Froebel and his great plan of educating little children, in which form plays the principal part. He taught us that the great intellectual sense of touch, and the products of this sense, form, lie at the basis of all intellectual development.

Teachers may well ask, What opportunities has a

Countless opportunities to study form.

child for form study? Form study consists in the development of mental germs, crude and obscure, into distinct and approximately adequate concepts of form. We as teachers, following the traditions of our spiritual ancestors, have wandered far away from the essential subjects of study. Our mental vision has been fixed too much upon dead forms and formalism, and not upon the thought to be expressed. When we turn our eyes upon the central subjects of study, and their intrinsic value in human development, the opportunities for form study become to us endless and infinite; and we realize that the value of all true study depends upon the distinctness of concepts corresponding to external forms.

Geography is fundamentally a study of form, forms of the earth's surface, forms of meeting and parting slopes, of which all the characteristic areas of the earth's surface consist. For years I have endeavored to lead graduates of High Schools and Colleges into the rich and beautiful fields of the imagination, which in Geography lie beyond the sense grasp. I find continual and fundamental weakness in the action of the imagination. I seek for its cause, and find it in the reliance upon dead forms of expression, and not upon the reality. Observation of surface forms is the indispensable foundation of all attempts to image the continental structure; thus, field excursions in Geography are of the first importance. Under the direction of teachers who are keen observers, field excursions are never-failing sources of delight and economical instruction to the child.

Weakness of students in power to imagine.

You will recall the discussion in regard to the organic relation of Geography to Geology. Although,

in the study of Geology and Mineralogy, color, density, and weight are of great importance, still form always stands first. When we rise from the subjects that pertain to inorganic matter to those that pertain to organic matter, we have a continuous study of form; in plant-life we have the form of the leaf, the stem, the flower, and the root. Form is the principal environment of the child, and the teacher's main purpose should be that the forms studied should continually enhance the conscious activities corresponding to the forms of external objects. The innumerable forms in nature and art may be reduced conventionally to a few types; for instance, the sphere, the cylinder, and the cube. There are no typical forms in nature. All the forms in nature are irregular. They depart in every line and surface from the conventional or typical forms. Therefore it seems logical that real or natural forms should be studied first, that they are more adapted to the crude concepts of the child, and that typical forms should be slowly approximated. When geometry becomes a necessity in education, as it should very early, probably in the sixth, seventh, or eighth Grades in a grammar-school, then the direct study of conventional or typical forms becomes necessary in order to imagine the real forms which lie beyond the sense grasp.

Study of form in living organisms.

Real forms and typical forms.

Geometry in Grammar Schools.

The conclusions that may be reached from this imperfect presentation of the subject of form and Geometry study are these: first, the study of form and Geometry are of fundamental, intrinsic importance in education; second, all study of form may be confined to observation and the study of all the central subjects,—that is, there is no

Conclusions.

necessity for form-lessons in themselves, or form study, without an immediate higher aim in the study; third, that in the study of the central subjects which require the action of the imagination, the principles and propositions of elementary Geometry may be fully acquired in direct relation to the study of the central subjects; fourth, the immediate and the highest aim of the study of form and Geometry is to know the laws of energy acting through matter.

IV.

NUMBER AND ITS RELATION TO THE CENTRAL SUBJECTS.

Prominence of Arithmetic in education.

ARITHMETIC was one of the first subjects to be taught after the classics had resigned their almost universal sway; it was indeed the successor of classics in the so-called lower-class or public schools. The cause of its popularity and universal use is not far to seek. It presented an immense amount of practice for both pupils and teachers, and it filled school-hours with definite exercises. The solving of problems, or, as it used to be called, "doing of sums," was something that every teacher, no matter how uneducated or untrained, could give his pupils for tasks, and the people readily acknowledged the practicality of Arithmetic. Long before Geography was thought of, or English Grammar came into the schools, Arithmetic had taken a firm hold; and to-day it is probably true that one fourth of all the time in schools of English-speaking people is taken up by the study of this subject.

Progress in teaching arithmetic.

Some progress has been made lately in the methods of teaching number through German educators, notably Grube and Bohme, who called particular attention to the use of objects as a means of teaching number, and to the fact that the five operations should be taught in immediate relation. With the exception of these improvements,

Arithmetic as a study remains practically the same as it has been for years—the solution of problems, the memorizing of figures, and the learning of rules. No efficient attempt has been made to change the teaching of Arithmetic in our schools, except in the Primary Grades, since Warren Colburn published his wonderful elementary Arithmetic.

Discovery of arithmetic.

The science of numbers was discovered in the remote past, out of the reach of recorded history, and, in common with all other sciences, it had its birth in mythology, as had chemistry in alchemy, and astronomy in astrology. Number was born in superstition and reared in mystery. We know that numbers were once made the foundation of religion and philosophy, and that the tricks of figures have had a marvellous effect on a credulous people.

Arithmetic essential to all human progress.

Arithmetic is an essential factor in every step of human progress; still, the subject as a school study has been held until to-day almost entirely apart from anything like practical education. That which is most deeply rooted in tradition has a sort of benumbing effect upon the intellect; the profound reverence of the average scholar for the past making him accept the logic of his ancestors without question.

Mathematics is called the exact science. The science of Arithmetic may be called the science of exact limitation of matter and things in space, force, and time.

Importance of arithmetic in all practical matters.

Nothing useful can be made or constructed without the use of that mode of limitation called numbering. Not the simplest article of furniture, not an instrument, tool, machine, nor building, can be made without exact measurements. Commerce

would be impossible without the measurement of weight and bulk of articles. There could be no relation of values without number. All progress in science, as has already been said, is absolutely dependent upon number. Any knowledge of Geography, Geology, Chemistry, and above all else Physics, is impossible without accurate measurements of volume, weight, force, and time. That mode of judgment which we call numbering enters into every activity of life, and into every relation of science or business,—into the kitchen, into the parlor, into the workshop, manufactories, commerce, and into all human progress. Not an hour passes in an intelligent man's waking life without the necessity for the use of number.

The truly practical.

Numbers enter into all acts of practical life, into all intellectual attainment; they are essential factors in all human development. What is number? What are the nature and function of those acts of the mind which number? By what mental process do they become known? Number is a mode of judgment. There are no numbers or acts of numbering outside of consciousness. Number is the product of mind, and does not exist outside of the mind. All that lies outside of and acts upon consciousness may be considered as causes of effects in consciousness, but are entirely separated from the causes.

What is number?

Preparation for numbers by a child's spontaneous activities.

An act of judgment in numbering is an act of limitation. The little child spontaneously begins his practice in numbering or his preliminary studies of number, just as soon as he tries to measure with his arm the distance between himself and any object, or the distance between himself and a chair, when he begins to creep or walk. All his

early experiences are mixed up with vague strivings after definite limitations of weight, distance, and single things. When these vague inferences rise to positive and accurate judgments they may be called acts of numbering.

Beginnings of number.

The limiting adjectives, some, several, many, much, few, small, little, great, high, tall, long, short, are the expressions of inexact or vague inferences. These inferences are not acts of numbering; they are but the beginnings, the initial steps, which create the necessity for accuracy, and therefore lead up to numbering. Indeed, all efforts to measure distance, areas, weight, force, and time may be referred to that spontaneous action out of which exactness and accuracy may be developed by necessity or education.

Necessity of careful definitions.

The tendencies of the child's spontaneous or instinctive activities are the perfect indications of what he should study, and as well the natural method of study. Many, if not most, of our pedagogical errors have their origin in the ignorance of the nature and functions of the subjects taught We were in the dark concerning the practical educational value of color and the method of teaching it until scientists like Helmholtz discovered what color really is. Those subjects which have been taught for the longest time, such as Reading and Arithmetic, are, as a rule, the least known. They are buried "full five fathoms deep" in tradition and pedantry. The best clue to the nature and function of number, as with all other subjects of thought, is to be found in the innate tendencies of the child manifested in his spontaneous activities,—in what nature demands that he shall *do* in order to *know*.

From this standpoint, then, let us again ask, What is number and what its function? First, the child enters a visible, tangible world. His environment acts upon him and arouses and develops mental life. His knowledge depends utterly upon the mental energies which respond to the action of external forces. He is surrounded by objects that stimulate judgment;—forms of differing size, weight, and dimensions. The form of an object is its surface limitations in space. He is utterly dependent for his knowledge of an object, his inferences in regard to an object, upon its correspondence in consciousness. That correspondence is non-spacial. The fundamental knowledge of an object depends upon form and size. Form and size are the exact limitations of an object in space. The knowledge of the form and size of an object is not only indispensable to the knowledge of that object, but also of its relations to other objects, in comparison, classification, and consequent generalization.

Form and size.

Size has three dimensions—length, breadth, and thickness. The spontaneous tendency of the intellect is to know length, breadth, and thickness. Whatever may be the innate or *a priori* tendencies of the mind, this much is sure—a knowledge of form and size must be acquired entirely by self-activity; and every act of the child, every movement of the body, of each and every organ of the body, either in attention or expression, has in it an element or an attempt at measuring size. That the child at first has no knowledge of distance is shown by his reaching for the moon as confidently as he does for a lighted candle close to him. All his knowledge of size must come through

Size.

The child's first attempts to know distance.

experience. Definite experience is acquired by habitual self-activity in one direction. The direction of knowing or inferring distance is a positive and inborn aptitude of the child. He strives to measure distance, area, and volume by the attention of all his senses and by the expressive acts of his whole body. It cannot be too often repeated that the first attempts at measuring are exceedingly vague and obscure. They are the invariable signs of exceedingly crude individual concepts.

Distance, area, volume.

Nevertheless, the child is incessant in measuring and judging distance, area, and volume. For this purpose all his muscular activity, his muscular sense, is brought into continual action. In creeping and walking the child is always measuring with his eye, with his hands, with his feet, and indeed with his whole body. The first act of a child in walking is an act of measuring. He attempts to take his first steps by calculating with his eye the distance between him and the outstretched arms of his mother. He creeps towards an observed object by first measuring the distance between himself and the kitten. Just as he makes for himself instinctive gestures and language, so he makes for himself measures of distance, measures of area, and measures of volume. As his individual concepts rise from obscurity to clearness, there is a necessity for exact measurement. Then come the conditions for higher education, and an arbitrary scheme of mensuration takes the place of the child's instinctive plan. He knows intuitively one step and more than one step. He learns from one step, two steps, if the proper conditions are presented. He infers the distance of one foot, one yard, and with that men-

Creeping and walking.

Necessity of exact measurements.

tal limitation he measures two feet, two yards. He gains these measures by his own experience, assisted by the language and directions of his parents.

The so-called abstract numbers mean nothing whatever to the child. To him they are worthless unless applied. When the proper opportunities arise, he learns one inch, one foot, one yard, one square foot, one inch cube, etc. Thus, from mere spontaneous activities is developed the necessity for exactness and accuracy. When the child feels the knowing distance, area, and volume, the proper conditions being presented, he will measure and learn length, breadth, and thickness. Thus, numbering activity is organically related to form activity. The mere form of an object finds its highest importance in size. The knowledge of form is the initial step, the knowledge of size an absolute consequential necessity.

Necessity of accuracy and exactness.

A knowledge of size is a direct sequence to knowledge of form. Form and size are really one in mental act, for there can be no individual concept corresponding to external form without some judgment of the size of that form. The educational question is: Is that judgment an exact one? This brings fully to our minds the necessity of numbering. An object may be infinitely small or infinitely great, as to its dimensions, but identical as to its form. A sphere one inch in diameter has exactly the same form as a sphere twenty-five thousand miles in diameter. The especial difference is in size, and that difference can be known only by the exercise of that mode of judgment which we call numbering. Apply these facts to the study of the central subjects, and we

Relation of form to size.

shall see what a vast field is presented for the constant and continual exercise of the faculty of numbering.

Number in Geography.

Turn to Geography:—the form of a continent one mile in length may be the same as the form of a continent—Eurasia, for instance—which is more than ten thousand miles long. A little brook basin may have the same form as the basin of a mighty river. The differences are in size. I have said that Geography is a study of the surface form of the whole earth, and characteristic areas of that surface; but I will here add, that the knowledge of area of the earth's surface and the area of any given characteristic unit of surface is fundamental in all study of Geography. As the forms gained by observation determine precisely the imagined forms that lie beyond the sense grasp, so the measures of lines, areas, and volumes, that are gained by direct and immediate experience in observation, are the indispensable criterions by which we measure all space outside our sense horizon. Whatever these measures are, so will be our measures of the imagination. There can be no exact individual concept of the area of a continent. Most, if not all, the measures of space by the imagination are approximate. At the same time it may be repeated that whatever the measures acquired by measuring with the hand, the eye, are, so will be the value of all approximate measures of the imagination. These measures approximate adequacy just in proportion to our experience. We travel a thousand miles upon the cars at the rate of thirty miles an hour. We measure vaguely the time by hours, and by that measure we form some approximate estimate of

Areas of continents.

the distance, and that becomes, in turn, the measure of another thousand miles, and another, and so on. The habit of accurate measuring is acquired solely by the exercise of the numbering faculty, which grows out of present and immediate necessities ever presenting themselves. Geography is a study of form and size; form is the fundamental step, and size the immediate sequence. If the child had no other study than that of Geography, and the exercise of the numbering faculty met the necessities of the child's increasing knowledge both of observation and imagination, the opportunities for the acquisition of the knowledge of Arithmetic, as it is now understood, would be fully adequate.

Opportunities for exercising the judgment in numbering.

The point I have to make here is that the teacher must always know when there is a necessity for measuring, must always know when the numbering faculty should be exercised. In field excursions, or when riding on the car, the size of the field and the woods, the length of the slope, the breadth of the river or brook, or the area of the lake, should be approximated. It goes without saying, that unless the conditions for these necessities of knowing are presented to the child, the child's measuring power will remain in vagueness and obscurity, but the moment the necessity of knowing is presented, then the child feels that he should know the distance which he passes over, which he views with his eyes and which he measures with his feet. Then, in imagination, there can be no effective knowledge of the natural areas of the earth's surface, or the areas of political divisions, without this exercise of the numbering faculty. After a study of the structure of the

Imagination.

United States, for instance, how many practical questions, appealing to the pupil's sense of right, can be made by comparing the sizes of the different states, one with another! How many Delawares in Texas? How many Englands in the United States? How many Hollands in Russia?

Arithmetic in mathematical geography.

I have spoken of the study of form and Geometry in the study of mathematical Geography, and what is said of form is also true of Arithmetic. To gain anything like a clear knowledge of the distribution of sunshine over the earth's surface, and the natural machinery for that distribution, arithmetical problems must come in at every step; and there is no Arithmetic extant that contains the number of problems, to leave out entirely the practical side of the question, that such a study would bring to the pupils.* The study of number is inherent in the study of all the central subjects. Observations necessary to gain a knowledge of distances, areas, volumes, are numberless. They are right in the line of the child's mental activities. They are intrinsic to the subjects themselves, and inherent in the child's tendencies.

Seek the centre.

Density and weight.

Although form and size constitute the foundation of all search for truth, we must add here the knowledge of another great property of matter, and that is, *weight*, the measure of gravitation, and the examination into its laws. Just as a child begins his inquiries with size he begins his experience with weights. The weight of his own body, the weight of a cart he draws, the weight of

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*The sequence of subjects, and their relation to each other, should be determined by the necessities of knowledge, and not by any arbitrary scheme.

the doll, the weight of the knife and fork, all his lifting and carrying, are the beginnings of the after knowledge of exact weights. The child begins instinctively to weigh, and to compare weights; to compare the weight of one doll with another, or the kitten with the cat, and he also makes his own units of weight. He feels the weight of a pound, and he compares that weight with a lighter and a heavier. This strong, instinctive tendency to weigh portions of matter is a preparation for later accurate weighing or accurate numbering by weighing.

Size and weight.

One of the fundamental properties of matter is density. Density, the compactness of atoms or particles, is ascertained by weighing, and by comparing weights with volume or size. Thus size and weight are closely related. A pound of feathers weighs as much as a pound of lead. The difference is in the volume or the space occupied by the two portions of matter. The knowledge, then, of weight and density is an indispensable factor in all study of matter. For instance, in the study of minerals, density, which is measured by weight and comparative size, is as important as a knowledge of form. The weights of different metals, comparative weights of soils and of woods, are all prominent factors in investigation.

Measuring forces.

The principal means of knowing energy or force is to measure it. The child, when he lifts a ball to throw it, instinctively measures the distance between himself and the target, and as instinctively measures the force necessary to throw it. He automatically measures the distance of his steps in walking and running, and in the same way determines the force necessary for the proper

movement. When he breaks articles there is a vague measuring of force. He builds a little mill-wheel in the brook, and this measures indefinitely the force of water. These are a few illustrations of the vague beginnings of the measurement of force, which are to grow into higher educational value when the means used for measuring are exact. I refer again to the position taken in the conclusion of the talk upon the "Central Subjects of Study," that all true study is the study of invisible energy, and the direction of that energy which we call natural law. Number is a mode of judgment by which energy is measured; form is a result of peculiar differences in the kind of energy acting; size is the extent of that energy; weight is but another term for the measurement of energy—the energy of gravitation. Thus, you see, all these subjects of form, size, weight and force are one, or sequences of the same subject.

Time.

Time is known only by accurate judgments of the duration of moving objects. All matter is in space and moves in time. There can be no measuring of force without a corresponding measuring of the time taken for its action. I need hardly refer to the child's measurement of time: the morning and the night, the darkness and the daylight, breakfast-time and dinner-time, time of going to school, time of going to a picnic, time of waiting for some promised pleasure, time to Christmas, time to the Fourth of July. Later come in more approximately accurate inferences. The sun, the darkness, and finally the dial and the clock, are used as measures, each and all exercising either the preparation of the mind for numbering, or actually numbering in itself. I have already shown the

relation of the measuring of time to the measuring of force and of force to weight, to size, and to form. The relation of time to the study of the central subjects is inherent in all effective attempts to study, but it may best be shown in History. History moves on in space through time in great parallel lines. Comparative chronology measures the evolution of civilization; thus the memory of dates and their relation to each other, is an indispensable factor in understanding History. A date, which marks some event or period interesting to the pupil, is a symbol which recalls a long series of events. Population of cities, countries; number of people who live upon a square mile; the relation of the number of inhabitants who occupy one country to that of another; are questions in Arithmetic which assist in the study of History.

History.

The natural unit of number is an individual concept, a concept which the ego discriminates from all other concepts. If it corresponds to some external object, it is inferred that that object is one object, and therefore it is discriminated from all other objects. The power to limit numbers of objects by this natural unit is the foundation of the number faculty. The numerical relation of single objects and things, which is usually placed first in the discussion of number, I take the liberty of placing last, on account of the great law of all human growth and human progress—necessity. Distance, area, volume and weight, are greater necessities of knowledge than the numerical relations of single things; however much, these relations have in themselves of value. The presentation of single objects in teaching a child number, objects which do not in themselves con-

Single things.

tain any necessity of knowing, do not stimulate and arouse mental action by a feeling of necessity. You place three sticks and three sticks before a child, and he may be led to see six sticks; but he does not feel any great necessity for the information.

Feeling of right.

Equivalent values.

One necessity, however, does appeal to the child, and that is, a knowledge of equivalent values; knowledge of the relation of money as an agent of purchase. Most of our Arithmetics are filled with this one subject of money-equivalents. They form the bulk of all the problems in Arithmetic, overstimulating, too often, the sordid nature of the child. Arithmetics are filled with percentage, interest, banking, etc. This is the so-called practical value of Arithmetic, that the child may be able some time to make change in a grocery-store. Now it is not to be denied that a knowledge of the immense ethical value of money, and its purchasing power, should be acquired as a great means of education; but in spite of all the Arithmetic studied in the schools, and the vast amount of time consumed, knowledge of money-values is really acquired only by the handling of money, by the actual necessity presented in commerce, whether it be the buying of a stick of candy for a cent, a pound of raisins for twenty cents, or a gold mine for a million dollars. When money and its relations are taught merely from its so-called practical standpoint, with the sole end in view, commercial use, it has very little educational value. It should be taught from a much higher standpoint of civics, in the light of its ethical relation to human progress, and it is to be hoped that the future Arithmetic will contain some problems that bear directly upon the higher

Money.

Selfishness cultivated by a prolonged study of money-values.

and more valuable knowledge, and fewer upon that which aims to make a competent clerk or accountant. At the same time it may be said that a knowledge of the higher always includes the lower. Too much time altogether is given to this one thing; if we may take the evidence of merchants and bankers, to the effect that a boy enters the counting-room after having studied eight or ten years continuously money-values, with very little practical knowledge of book-keeping and accounts.

I will now group the subjects of number, trying in this scheme to comprehend all the real subjects of number, and also the general relations of these subjects to all study.

First, Lines; second, Areas; third, Volume and Bulk; fourth, Force, the measurement of Energy; fifth, Time; and sixth, Single Things, including Money Values.

Relation of arithmetic to the sciences.

Heretofore, as above stated, the learning of Arithmetic has been made an isolated subject, learned by itself, and practically applied as sparingly as possible. Let us consider what science, or what subject in itself, can be learned without the action of that mode of judgment called numbering; for instance, take the science of Geography. Its comprehension demands a knowledge of lengths, areas, heights, etc.; at every step, the concepts of surface necessitate exact limitations, the comparisons of surfaces with each other, of a political division with a whole, or of one country with another. How many steps can be taken in History without continually using the measures of time, the exact populations, the number of men in armies, etc.? Illustrations need not be multiplied

Relation to Geography.

to show that no study can be pursued in itself without the continual application of Arithmetical facts.

Feeling the necessity of number.

Taking into consideration the short time generally given to school education, which way is the best: Shall the knowledge of number spring from a necessity which a child feels, understands, and appreciates; or shall he be taught without the spur of any immediate necessity, under the vague idea that the tasks may be of use sometime? Let us illustrate this. The child is called upon to learn the fact that four and five are nine. Now, which is the better way,—for the child to feel a necessity for learning that the dimensions of the box which he is making is four inches by five inches, or to simply repeat the fact that four and five are nine. Grant even that he uses a better device, with objects before him, and learns that four objects and five objects are nine objects; he feels no necessity for knowing that four objects and five objects are nine objects, but he does feel a necessity for knowing how to measure lengths of the models which he makes in the Sloyd. He must measure in order to do exact work. Is it not proved by actual experience that a child may learn all the facts inside of twenty through the necessity of knowing the distances that he must walk, the areas that must be studied; by making models, by blackboard work, and by drawing?

Mere recollection without judgment.

Teaching children numerical figures without their application is merely cultivating the recollection of meaningless forms, without any exercise of the judgment. There is not the slightest exercise of the judgment in simply repeating the fact that four and five are nine. A judgment is the essen-

tial element of reason, and when a child is actually measuring objects he is reasoning. When he is learning the figures in the multiplication table he is cultivating his verbal memory, to be sure, but working even in this at a disadvantage because ignoring the laws of necessity, of use, and association, reasoning having nothing whatever to do with the process.

There is besides a far higher consideration involved, and that is, the cultivation of moral power. By no precept can a child be dogmatically taught that any act is right in itself, but the right action will appeal to his sense of right with overwhelming power. If he is making a box ten by twelve by eight inches, he knows and feels intuitively that he must know ten by twelve by eight, that he must compare the two ends, that he must compare the sides of the box with each other, and that he must measure exactly. He does not have to look forward to a time when he will need number, when it will be of use to him when he is a man, and has to exercise the duties of a man in a store or shop; but he knows that he must exercise this power upon the spot, because it is a present and absolute necessity.

Practical application of all number-study to the study of the central subjects.

The plain reason why children do not exercise their reasoning powers in studying Arithmetic is because there have been very few subjects taught in school which admit reasoning. The mere formal learning of words does not admit any exercise of inference or judgment, and hence the forced necessity to learn empty forms and dry facts for future application. In its infancy, number had little practical use until it occurred to some thoughtful mind that there was more than astrology in the knowledge of the heavens, and myth was

raised to the dignity of a science by the practical application of mathematics.

We are to-day face to face with the proposition of putting subjects of thought, the sciences, into our schools; and therefore this discussion is of profit to those who see the relation between the knowledge of number and the knowledge of matter, or, better, the knowledge of natural laws.

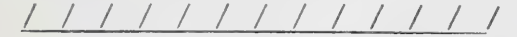
V.

WHAT CAN BE DONE WITH NUMBERS?

We place before us twelve marks,

| | | | | | | | | | | | |

or a line twelve inches long,



Investigation as to the nature of numbers.

Whatever the mind can judge of these twelve marks or of the twelve inches can be universally applied as valid for all the limitations we make by the mode of judgment called number. Let us proceed with the investigation in the simplest possible way, bearing in mind at every step that numbering is a mental act, that there are no numbers in reality outside of consciousness and conscious activities; that the relation of external forces or objects to number is the relation of their action upon consciousness, and that the mind alone numbers.*

All that can be done with a number.

The attention is now called to one number. All that can be done with that number is to divide it, and the same can be said of any number. We can divide the number twelve into a number of equal numbers, as: twelve divided by four equals three

* All numbers are abstract; they are the products of judgment. Numbers may be either *applied*, or *pure*, numbers. When a number is used as a numeral adjective limiting things by ones or units, it is applied; when a number is not applied or used as a numeral adjective, it is a pure number.

Division.

fours ($12 \div 4 = 3$); twelve divided by three equals four threes ($12 \div 3 = 4$); twelve divided by six equals two sixes ($12 \div 6 = 2$); twelve divided by two equals six twos ($12 \div 2 = 6$). Or, twelve inches divided by four inches equals three four-inches (12 in. $\div$ 4 in. = 3); twelve inches divided by three inches equals four three-inches (12 in. $\div$ 3 in. = 4); twelve inches divided by six inches equals two six-inches (12 in. $\div$ 6 in. = 2); twelve inches divided by two inches equals six two-inches (12 in. $\div$ 2 in. = 6). By these sentences we ask how many fours are there in twelve; how many threes are there in twelve; how many sixes are there in twelve; how many twos are there in twelve; how many four-inches are there in twelve inches; how many three-inches are there in twelve inches; how many six-inches are there in twelve inches; and how many two-inches are there in twelve inches? For instance, twelve inches divided by four inches equals three, which means that there are three four-inches in twelve inches. This process is the division of a number into equal numbers.

Division of a number into equal parts.

A number can be divided into equal parts. It is necessary very often to find the value of one equal part of a number, or the number in one part. This is an *entirely different* operation from finding the equal numbers in a number. In finding the equal numbers in a number, we must know the number to be divided into equal numbers, and we must know one of the equal numbers into which the number is to be divided, and we find the number of equal numbers in the number to be divided. We divide twelve into equal parts in order to find the number in one part. We divide twelve into four equal parts,

and we find the number in one part is three, or three ones. We write: one fourth of twelve equals three ($\frac{1}{4}$ of 12 = 3). We divide twelve into three equal parts, and we find the number in one part is four, or four ones. We write: one third of twelve is four ($\frac{1}{3}$ of 12 = 4). We divide twelve into six equal parts, and we find the number in one part is two, or two ones. We write: one sixth of twelve is two ($\frac{1}{6}$ of 12 = 2). We divide twelve into two equal parts, and we find the number in one part is six, or six ones. We write: one-half of twelve is six ($\frac{1}{2}$ of 12 = 6).

Difference between dividing a number into equal numbers and dividing a number into equal parts.

Dividing a number into equal numbers and dividing a number into equal parts are two materially different processes, with different operations and different answers. For instance, twelve apples divided by four apples equals three fours of apples (12 apples ÷ 4 apples = 3). One fourth of twelve apples equals three apples ($\frac{1}{4}$ of twelve apples = 3 apples). In dividing a number into equal numbers, the quotient is equal in value to the dividend; in dividing a number into equal parts, the quotient is an equal part of the dividend. It is of exceeding importance, as will hereafter be seen, that these two mental operations are kept distinct.

Great importance of understanding this difference.

We can divide a number into two numbers, equal or unequal, when we know one of the numbers. We can divide twelve into seven and another number. The Arithmetical sentence is, 12 − 7 = 5. We can divide twelve inches into three inches and another number of inches. We write, 12 in. − 3 in. = 9 in. The mental operation is the division of twelve inches into three inches and nine inches.

Subtraction.

All that can be done with a number is to divide

it, and we can say that there are three different kinds of division stated:

Three kinds of division.

Dividing a number into equal numbers in order to find the number of equal numbers.

Dividing a number into equal parts in order to find the number in one of the parts.

Dividing a number into two numbers in order to find the value of one of the numbers.

We cannot fix too firmly in the mind that all that can be done with any one number is to divide it, and that there are three cases of division.

What can be done with numbers?

All that can be done with a number of numbers can be stated in one simple sentence. Numbers may be united, or, in other words, a number of numbers can be thought as a unit; "united into one sum or amount," is tautology. A number of equal numbers may be united, as: three fours are twelve, four threes are twelve, two sixes are twelve, and six twos are twelve. A number of numbers, equal or unequal, may be united, as: $5 + 4 + 3 = 12$. We make the general statement again, that all that can be done with a number is to divide it into equal numbers, into equal parts, or into numbers equal or unequal. All that can be done with a number of numbers is to unite them. Equal numbers may be united, and numbers equal or unequal may be united.

Numbers can be united.

The student is earnestly invited to criticise with great care and closeness the following definitions of the five operations in number:

Definitions of the five operations.

Division is dividing a number into a number of equal numbers.

Partition is dividing a number into a number of equal parts in order to find the number in one part.

Subtraction is dividing a number into two numbers, one of which is known.

Multiplying is uniting a number of equal numbers.

Addition is uniting a number of numbers, either equal or unequal.

Considerable repetition may be necessary in order to make these very simple definitions plain and explicit.*

Definition of division illustrated.

Division is dividing a number into a number of equal numbers.

III, III, III, III.

A dividend in division is the number to be divided into a number of equal numbers.

A divisor in division is any one of the equal numbers into which the dividend is to be divided.

The quotient in division is the number of equal numbers into which the dividend is divided. (The quotient, or number of equal numbers into which the dividend is divided, is equal to the dividend.)

The Arithmetical sentence is as follows: $12 \div 4 = 3$; three is a numeral adjective limiting four, and means three fours. Thus, in division, the quotient must be equal to the dividend, as the quotient is the number of equal numbers into which the dividend is divided. Ask the question, How many three-cents are there in twelve cents? and the answer is, Four three-cents. The arithmetical sentence is, $12c. \div 3c. = 4$, and the

* "Division is dividing" may perhaps be called a definition which does not define. If there is another and better word than "dividing," I have failed to find it. "Separating" means "apart in space." Conscious activities are non-spacial. Dividing is the best word, and must be used in spite of the criticism that it is tautological.

four means four three-cents. 12 in. ÷ 3 in. = 4, or, in other words, there are four three-inches in twelve inches. Again, we ask the question, How many two-pints are there in twelve pints? Arithmetical sentence, 12 pts. ÷ 2 pts. = 6. The answer is, six two-pints, or six quarts. How many one-fourths are there in one half? Arithmetical sentence, $\frac{1}{2} \div \frac{1}{4} = 2$. The answer means there are two one-fourths in one half. How many two-thousandths are there in twelve thousandths? Arithmetical sentence is, .012 ÷ .002 = 6. The answer is, six two-thousandths. The value of the quotient is known by making it the numeral adjective limiting the divisor. Six limits two-thousandths. (Otherwise the quotient has no value.) *

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* In order to use the sentence, 12 ÷ 4 = 3, with two meanings,—one that twelve divided by four is three fours, the other that twelve divided by four is three ones,—it was found necessary to call the quotient in the first case an *abstract* number, meaning (in this case) three *times*. What does three *times* mean? If it means three fours, the idiom is plain, but it is asserted that three *times* means three times and nothing else. 12 apples ÷ 4 apples = 3 *times*. If 12 ÷ 4 = 3 times, then 3 times = 12 ÷ 4. 100 ÷ $33\frac{1}{3}$ = 3 times, ergo 3 times = 100 ÷ $33\frac{1}{3}$. Therefore, 100 ÷ $33\frac{1}{3}$ = 12 ÷ 4. It follows that three as a quotient always has the same value. 3 times four, or three 4's, are 12. 3 times $33\frac{1}{3}$ are 100. 3 times 4 does not equal 3 times $33\frac{1}{3}$, yet the reverse, it is said, is true; that is, \$12 ÷ \$4 = \$100 ÷ $\$33\frac{1}{3}$.

We have the sentences:

(1) 7 + 5 = 12.
(2) 12 = 7 + 5.
(3) 12 − 7 = 5.
(4) 5 = 12 − 7.
(5) $\frac{1}{3}$ of 12 = 4.
(6) 4 = $\frac{1}{3}$ of 12.
(7) 12 ÷ 4 = 3 4's.
(8) 3 4's = 12.
(9) 12 ÷ 4 = 3 times.
(10) 3 times = 12 ÷ 4 ! ! !

The first eight sentences are perfectly plain and simple; every child can understand them.

Partition.

There is a second case or kind of division which may be called partition, or, as the Germans call it, *Teilen*, and, as has already been said, must be kept entirely distinct in thought from the process of dividing a number into equal numbers. Using the word partition, then, for this kind of division, the definitions may be made as follows:

Partition defined.

Partition is the division of a number into a number of equal parts in order to find the number in one equal part.

The dividend in partition is the number to be divided into equal parts.

Factors in partition.

The divisor in partition is the number of equal parts into which the dividend is to be divided.

The quotient in partition is one of the equal parts of the dividend.

Partition illustrated.

For instance, we wish to divide twelve into three equal parts. The dividend is twelve, and the divisor is three. Arithmetical sentence: $\frac{1}{3}$ of $12 = 4$, and must not be confounded with $12 \div 3 = 4$. In $\frac{1}{3}$ of $12 = 4$, four is the value of the number in one part into which the twelve is divided. We wish to divide twelve apples among three boys. We say one boy would have one third of twelve apples. One third of twelve apples is four apples ($\frac{1}{3}$ of 12 apples = 4 apples); therefore each boy will have one third of twelve apples, or four apples. Again, we wish to divide one half into three equal parts in order to find the value of one part. Arithmetical sentence is, $\frac{1}{3}$ of $\frac{1}{2} = \frac{1}{6}$, which means that one half is divided into three equal parts, and the numerical value of one part is one sixth. Again, we wish to divide twelve hundredths into three equal parts. Arithmetical sentence: $\frac{1}{3}$ of $.12 = .04$. How many three-hundredths are there in twelve

hundredths, written, $.12 \div .03 = 4$, that is, there are four three-hundredths in twelve hundredths.

Subtraction defined.

Subtraction is dividing a number into two numbers.

The minuend is a number to be divided into two numbers.

The subtrahend is one of the numbers into which the minuend is to be divided.

The remainder in relation to the subtrahend is the other number into which the minuend is to be divided.

Multiplication defined.

Multiplying is uniting equal numbers.

The multiplicand is one of the equal numbers which are to be united.

The multiplier is the number of equal numbers to be united.

The product is the equal numbers united.

3 4's = 12. ||||, ||||, ||||.

Definition of Multiplication illustrated.

To illustrate, three fours equal 12 (3 4's = 12); four threes equal twelve (4 3's = 12); four three-hundredths are twelve hundredths (4 .03's = .12); three one-halves are three halves (3 $\frac{1}{2}$'s = $\frac{3}{2}$). The word "times" is not here used, because it is an obscure word, and it explains nothing. Three fours, for instance, is direct language, it says in common idiom exactly what it means. Three times four must be very carefully explained to pupils, and then it is very easy to misunderstand it, as experience proves.

Addition.

Addition is uniting numbers, equal or unequal.

As, 3 apples + 4 apples + 5 apples = 12 apples.

$\frac{3}{4} + \frac{1}{2} + \frac{3}{6} = \frac{9}{12} + \frac{6}{12} + \frac{6}{12} = \frac{21}{12}$. .4 + .3 + .2 = .9.

The question for the teacher is, Are these definitions perfectly simple, exact, and true? Can language be used to express the facts in a plainer way? Are the definitions comprehensive? That is, does each definition include everything that can be thought of in the process defined? Great confusion has arisen in the teaching of Arithmetic with regard to the sentence illustrated by twelve divided by three equals four. It is stated in most Arithmetics, and indeed all Arithmetics published in America up to the time of the publication of the Franklin Arithmetic, that this sentence means, at one time, four threes (12 ÷ 3 = 4 3's); and at another time four ones (12 ÷ 3 = 4 1's). That is, twelve cents divided by three cents equals, in one case, four three-cents; in another case, twelve cents divided by three equals four-cents. As most Arithmetical operations are confined to these two Arithmetical sentences, illustrated by twelve divided by three, and one third of twelve, it is of immense importance to have a distinct understanding as to what this one sentence really means —twelve divided by three (12 ÷ 3). Does it mean that mathematics is the one exact science, and that an exact science must have an exact language, or that one sentence should stand for two totally different things? Should twelve divided by three mean in one case one thing (there are 4 3's in 12), and another thing (one third of twelve is four) in another case? The answer is not far to seek. In the first place, it should not mean two things, and, in the second place, there is no necessity for its meaning two things, as another sentence is

Attention called to the truth of the definitions.

Should an Arithmetical sentence mean two things?

always at hand to express the thought. Indeed, this sentence has always been, and is, a part of Arithmetic, as language. For instance, one third of twelve equals four ($\frac{1}{3}$ of $12 = 4$).

Let us place these two sentences side by side: twelve apples divided by six apples equals two, or six twos of apples; one half of twelve apples equals six, or six ones of apples, or, plainer, six apples. Each of these two sentences has a distinct and exact meaning; each one has an entirely different meaning from the other, therefore one sentence should never be used for the other. An equal part of a number has an entirely different meaning from the number of equal numbers in a number. To illustrate the sentence $12 \div 3 = 4$, we have such problems as the following: How many apples at three cents apiece can I buy for twelve cents? Problem: $12c. \div 3c. = 4$; therefore I can buy four apples. I wish to divide twelve cents equally among three boys; how many can I give each boy? $\frac{1}{3}$ of $12c. = 4c.$ In the first case the answer is four three-cents; in the second, four cents, only.

Is the quotient in division an abstract number?

Most Arithmetics declare that the quotient in division is abstract. To illustrate: twelve dollars divided by six dollars equals two. Twelve dollars is a so-called concrete number, but the quotient two is not concrete, not two six-dollars, it is abstract! Why is the quotient, the two six-dollars, any more abstract than the undivided twelve dollars? Reasoning of this sort is at least too abstruse for the common understanding; as well as unnecessary, when the whole matter is perfectly adjusted and can be made perfectly plain to all minds by using the two sentences, $12 \div 4 = 3$, and $\frac{1}{4}$ of $12 = 3$. There is absolutely no need, as has already been

said, of using one sentence to express two distinct meanings. There is no difficulty in the way of a common use of these two sentences, and by such use the Arithmetic of division and partition can be made utterly simple. There are abstruse things enough in this world which are natural and essential, without the necessity of creating artificial mystification.

We learn to judge by judging.

How does the mind acquire that mode of judgment called numbering? The answer to this question is very near at hand. We learn to judge by judging. Number is an exact mode of limiting single things, lines, areas, volume, bulk, force, time, and commercial values, by units or exact standards. Therefore the mind learns to number by numbering, that is, by measuring, weighing, learning to estimate lines, areas, volume, etc. There is no other way by which the judgment in numbering can possibly be exercised, and, indeed, no other way necessary. All that can be presented to the mind, externally, for its action, consists of objects or forms of matter.

Definition of attention.

Attention is holding the mind and body in the attitude of reception, or for efficient action of external objects. In the efficient exercise of that mode of judgment which is called numbering, attention plays a very prominent part. The standards of number are developed by observation; the mind can attend to acts of numbering just so far as these standards are developed and become forces or faculties of the mind; just so far and no farther the mind can act in exact measurements of numbers of things, lines, weights, etc. The direct contact of the mind with numbers of things, and the direct action of the mind upon objects in acts of

numbering, are absolutely essential to acquiring the power of numbering. The acts of the mind in recalling numerical facts, for instance, in recalling three fours are twelve, four threes are twelve, one half of twelve is six, four and three and five are twelve, *are not acts of numbering*, they are merely acts of recollection. There is no reasoning in these acts, there is no mental power exercised except the mere power of recollection.

So-called facts of number, matters of mere recollection.

Now these facts, it is well known, may be memorized by the mere repetition of the sentences; but it is of the greatest importance that teachers should understand that all exercises in the processes of adding, multiplying, dividing, and subtracting are not in any way acts of numbering, *per se*, or in any case a direct exercise of judgment in numbering. It is granted that certain facts, a certain power of recollection of numbers, and the relations of numbers are an absolute requirement in the economy of thought; but at the same time it is also just as necessary to know that the mere acquisition of knowledge of numerical facts in recollection in no way exercises the reasoning faculties.

Exercise of judgment.

In what direction is the exercise of judgment in numbering developed? The first answer to this question is one usually urged in regard to the development of the race in civilization. The lower the grade of development in the human race, the less there is known of number. It is said that certain savages of low order do not know more than three. As the necessity of knowledge increases, just in that measure numbering power is acquired.

Development of number in the race.

It may not be a valid hypothesis to say that in

the mind of each child numbers are developed precisely in the order that they have been in the development of the race; still it is something of a guide in attempting to answer the question in what direction should number be developed in the child. The line of development is apparent. The natural beginning is one, or the unit; the line of progress is from one to two, three to four, and so on, up the scale. The answer to the question, where should we begin with every child in numbering, is also plain. Begin with the child just where his numbering power is found to be. If he understands two, teach him three; if three, teach him four. Ascertain at first exactly what the child knows of number, and let this form the germ of all his after-growth. ONE forms the centre of the natural horizon of number, and this centre is enhanced by one or two, and that by one or more, and that also by one. It is not presumed that this line should be rigidly followed. The line of progress is governed by the necessities of growth, and whenever and wherever a child needs to numerically limit an object or objects, he should then and there learn to know the number necessary for needed exercise of his judgment, and to hold that knowledge ready for immediate application.

How should the numbering faculty be developed in the child?

Begin with the actual knowledge of the child.

It is, however, a very important question to ascertain what it is to know a number:

What is it to know a number?

I I I I

The knowledge of number may be summed up in the following general statements of facts to be acquired:

First, all the equal numbers in a number.

Second, all the equal numbers that united make a number.

These two facts are correlative, and one cannot be known without the other. One cannot know that there are two twos in four without knowing that two twos make four.

Third, the numerical value of any one of any of the equal parts of a number.

Fourth, the division of a number into any two numbers.

Fifth, the union of any two numbers.

What numerical facts should be known automatically?

A practical knowledge of number is comprehended in these five general statements. There is, however, one question still to be answered, and that is, What facts should be known automatically? Automatic knowledge is that knowledge which requires the least effort of the will in recollection; is that knowledge which approximates the spontaneous action of the mind. In other words, automatic knowledge is a habit of knowing, so fixed that the least possible effort is required in order to recall it. Now, it is not to be supposed that the five operations above mentioned should be automatically known to an unlimited extent. One should be able to ascertain any fact by numerical processes in the five operations. It can lead to an overburdening of the mind to endeavor to make much of this knowledge above stated automatic; but certain numerical facts should be absolutely automatic. Automatic knowledge in the principal directions means the freedom to act; means the least possible time, the least possible effort; it means also no obstructions in the way of quick and exact action of the mind. Therefore, the

question of what numerical facts should be made automatic is one of the first importance. Custom has fixed, to a great extent, the demand for these facts. There should be a less comprehensive limitation made. For instance, the knowledge of the equal numbers that make the number one hundred, inclusive, is absolutely sufficient for the most rapid calculation in that direction. The union of the numbers expressed by the nine digits is sufficient for addition; the division of a number into two numbers not exceeding twenty is sufficient for subtraction. Custom has made one hundred forty-four the limit in division, multiplication, and partition, so that the statement of the automatic power in numbering can be made as follows:

Numerical facts that should be known automatically, classified.

First, all the numbers of equal numbers in each and every number up to one hundred forty-four, inclusive, with twelve for the highest equal number, would cover the automatic knowledge for multiplication and division.

Second, the number in each and every part of any number up to, and including, one hundred forty-four, with twelve for the greatest number of equal parts, is sufficient for partition.

Third, the uniting of any two numbers represented by digits is sufficient for addition.

Fourth, the division of a number into any two numbers, up to twenty inclusive, is sufficient for subtraction.

How should automatic knowledge be acquired?

The prevailing method of teaching number is the acquisition of the facts above stated, without any relation to number itself; but, notwithstanding this criticism, the acquisition of automatic knowledge is of immense importance. At the same time,

it must be repeated, that the acquisition of the power of number is absolutely dependent upon the exercise of the judgment in numbering; that is, the application of number to objects, or, speaking more psychologically, to the development of individual concepts. There are two ways of gaining these facts: one is by verbal acts of memorizing, and the other is by acts of numbering. In the one case, as has already been said, the direction of the mind so far as the exercise of judgment is concerned, is left to accident; in the other case the conditions presented are such that the mind is continually judging. That is, the nature of the mental act determines the emotion or feeling aroused by the act, and the necessity of the action. In the mere exercise of the verbal memory there is no demand for reasoning power and no feeling of any necessity for numbering, except the mere will of the teacher.

Children who learn number by counting money.

It is at this point that the question of economy comes in as a very important factor. It was found that children of Italian parents, in Boston, whose business it was to sell fruit upon the streets, knew numbers up to eighteen, twenty, and twenty-five, readily, when they entered school at six years of age. The reason is apparent: they had simply, by the necessity of the exercise of judging money values, acquired this knowledge rapidly and completely. This fact, one among the many which could be cited, points to the true method of teaching number. Present the necessity for acts of numbering, and the facts will be acquired. How much drill is necessary in number? The old question, like Banquo's ghost, will "not down," reason, common-sense,

and experience to the contrary. Let it be said then, that just so much drill is necessary as will render the facts above given automatic. *The less the mind is exercised in actual acts of numbering, the more drill necessary.* On the other hand, the more the mind is exercised in numbering, the less drill is necessary,—the equation is apparent; the more reasoning, the less mere memorizing of figures.

Relation of number to drill.

Two reforms in number that have been instituted in English-speaking schools in this century consist, first, in the use of objects in teaching number, and, second, in the immediate organic relation of the five operations to each other. When the facts of figures are merely memorized, the more distinct from each other, and the more isolated, the better. Numbers have intrinsically perfect relations to each other, one fact cannot be known without its correlative; but in the mere memorizing of words and sentences operations have absolutely no relation to each other, and to teach them together would lead to confusion and weakness. To a child who does not feel the necessity of knowing the fact that three fours are twelve, and at the same time, that there are three fours in twelve, the facts in his mind have no relation really, and should not be learned together. When his attention is put upon objects themselves, when he is numbering, measuring, or weighing objects, he cannot learn one without knowing the other, and a failure of the teacher to relate the facts is simply to fail in knowing either. To know that seven and five are twelve, and not to know that twelve less five are seven, and twelve less seven are five, is impossible to a mind that is learning number itself, but to the

Teaching the five operations together.

mind that is simply trying to recall words in themselves, these facts are not related. When numbers are learned—numbers, not figures—all the five operations are essentially related to each other, and each kind of fact should be associated with the knowledge of the other correlated facts. This can be readily seen by the analysis of the number twelve:

Illustrations of the relation of the five operations.

Now, in order to test this, please tell me what you can see in twelve marks. The conclusion you must make is, that you know every one of the five operations in knowing twelve, and that these five operations are intrinsically related. You say there are three fours *in* twelve, also that two sixes *are* twelve, that one half of twelve is six, that twelve less six is six, and that six and six are twelve, or two sixes are twelve. You grant without question that the five operations are intrinsically related. When we look at numbers *per se*, the light is full and distinct, and the conclusion is inevitable.

The five operations in learning numbers must be acquired together; in fact, it can almost be said that they can be learned in no other way, and that the artificial distinction used in the Arithmetic pertains entirely to mere memorizing of numerical facts, without the least exercise of reasoning. The five operations should be taught together, not only from one to twenty, but from twenty to one hundred, and all through the development of Arithmetic. In the common teaching of Arithmetic very much is made of notation and

numeration, and the economical processes of finding results in numbers too great for automatic knowledge. For instance, the process of writing numbers, reading numbers, of adding, multiplying, dividing, large numbers are all economical processes. The Arabic system of notation and numeration is the basis of the great economy in numbers; it is therefore of great importance to study the history of the evolution of notation and numbering. It is also very well to note the uneconomical processes that were used for ages, notably the Roman system of numbers.

Notation and Numeration.

The question for us to answer here is, When should notation and numeration and all these operations be taught? What is the pedagogical line of development of these processes? Out of the foregoing these questions can be easily answered. When should a child write numbers? When there is a necessity for him to use the number in expressing his thought. When should he write the different forms of the different figures and signs? For instance, when should he write fractions? When he has occasion to use fractions. From the first, when he learns to read one-half and one-fourth in words, he should learn them at the same time in figures, and they should mean the same thing to him. When should he use decimals? When he is taught ten. He should always write one tenth in decimals, and the same can be said of all the decimal notation. When should he add large numbers, and go through the process of borrowing in subtraction? He should learn these operations when he uses numbers demanding such processes. The wonders of the Arabic decimal system should be open to him when the necessity

Fractions.

requires. One answer is valid for all these questions. When should he multiply a number greater than twelve, or divide by the process of long division? When such economy of mind is necessary. The habit of knowing the processes should come with the doing. Bring the child face to face with absolute necessity in his thought and action, and difficulties are easily overcome. If great stress is laid upon the exactness and skill in these processes, they may be easily cultivated when the necessities arise.

Necessities of mental action determine what should be taught.

We have but to take up a Common School Arithmetic in order to ascertain the usual arrangement of subjects, that has prevailed for a century or two. First, we have the four operations of Addition, Subtraction, Multiplication, and Division. Addition first, presumably because it is easiest; but that form of addition called multiplication is much easier, and division is simply the correlative of multiplication. Then follows, with a little variation in different books, the subjects of fractions, decimal fractions, compound numbers, percentage, interest, partnership, proportion, square root, cube root, etc.

Illogical arrangement of subjects in text-books.

It will be granted by all that a course of study should be an adaptation of conditions to the development of the mind, and that the enhancement of conditions should keep pace with the stages of the development of the mind. The so-called logical arrangement of subjects has been a fixed matter of tradition and is deeply rooted in custom. It remains for us to examine anew this arrangement, and to question, if it is necessary to divide up the subjects of Arithmetic in this way, to have one subject succeed the other, and in each

subject to have new terms and new definitions, new rules, and new mysteries?

Complex forms; confusion of terms.

The intrinsic relation of the five operations has already been discussed; also the necessity of acquiring skill in economical numerical processes has been explained. Of all confusion, worst confounded, we can take the subject of fractions as the climax. The difficulty of fractions does not consist in the exercise of the numbering faculty, but in the use of complex forms, rules, and definitions. It can be said, in a word, that fractions should be learned precisely like whole numbers. The only difficulty in fractions, a difficulty which is more artificial than real, is the identity of the fractional unit. Thus $\frac{1}{1}\frac{2}{2} \div \frac{3}{1}\frac{}{2}$ presents no greater difficulty than $12 \div 3$. In studying lines—for instance, in studying the foot—we have, twelve inches are three four-inches, or four three-inches, one half of twelve inches, one fourth of twelve inches, one sixth of twelve inches, etc. A child can readily see that one half of twelve inches is six, one fourth of twelve inches is three, and three fourths of twelve inches are nine—and the foundation of the fractional unit is laid. In other words, it is perfectly easy to teach all there is in fractions in the development of numbers, step by step, from two upward.

Fractions should be taught at every step.

The putting off of the teaching of fractions to the Fifth and Sixth Grades is simply putting in abeyance an essential means of developing the mind. The child, when he reaches the Fifth Grade, may know all there is to be known of fractions with the greatest ease, if fractions are really taught,—not the mere notation and numeration of fractions. Therefore we must conclude

that fractions, as in the usual arrangement of Arithmetic, coming after the four operations, is illogical, unpedagogical, and wrong. Fractions should be taught from first to last, and the same

Decimal Fractions.

can be said in regard to decimal fractions. Decimal fractions in notation have a great advantage over common fractions. Decimal fractions are perfectly easy and should be taught when ten is taught, and the notation of decimal fractions should always be learned and used when required in the development of number. Many pupils, after they have passed through a High School, and are asked to divide eight tenths by two tenths, put down four and do not know what it means. That is, they do not know that there are four two-tenths in eight tenths. This ignorance is due to the fact that the proper work is not done at the proper time.

U. S. Money.

All there is to be known of U. S. Money can be taught to a child inside of the number one hundred. I know the claim will be made that the difficulties of multiplication and division of fractions are so great that they should be taught as one subject. This is certainly true if the pupil is plunged headlong into the mysteries of decimal notation without any previous steps, but to develop the notation along with the development of the number there are really no difficulties,—no more difficulty in knowing two tenths than in knowing two, the whole number.

Compound Numbers.

Then we come to the matter of Compound Numbers: addition, subtraction, multiplication, and division of Denominate Numbers. It seems almost sufficient to ask the question of any intelligent person, Why should not all tables and pro-

cesses of denominate numbers be taught when the number is developed? Why should not two pints be taught, or three feet, or twelve inches, or sixteen ounces, right along in the development of number? Why should not all the operations of compound numbers come in with the five operations? Is there any reason why a child should not use lines, weights, values, etc., from the first? Is there any reason in putting off this essential knowledge until the Seventh Grade in the school? If a child is adding, why may he not add pounds? If he is dividing, why not miles or yards? If he is multiplying, why not dollars, pounds, or inches just as well? It would be very difficult to answer these questions in the negative. The logical place of compound numbers is in the normal development of number, and nowhere else; and all the necessary tables should be learned there. We have great complaint that children go out of school, after four or five years of study, without any knowledge of Arithmetic, and the cause for this is that these subjects are out of their pedagogical relation. They have an artificial, illogical place in the course. Tradition has taught us to put off these things until a certain time comes,—a time when one half of the children of the United States are out of school. *The genuine demands for a child's growth always include the best for practical life at all times.*

Practical subjects and educational subjects are a unit.

We now come to the subject of Percentage, or the decimal fractions of hundreds. With little thought here, we can refer all the per cents, or the division of hundreds into equal parts, to the teaching of one hundred. As has already been

Percentage.

shown, the child can learn a decimal just as soon as he learns ten, and that growth in the knowledge of decimals can be continued in all the five operations to one hundred, and when the child learns one hundred he can learn all that there is to percentage. Percentage is merely the practical application of decimal fractions, and the same answer can be made to the question of Interest.

Interest.

Of all subjects, within a few years, the subject of interest has been made the most mysterious, complex, and most confusing; still, the subject of interest in itself is perfectly simple and easy. Bookmakers have crowded their terms of rate per cent, base, etc., upon us; and when the pupils come to it they suppose that they are coming to a brand-new subject, when the fact is, if the subject of number has been developed, there is nothing essentially new to learn in interest. For instance, the subject of money earning money, when a child knows six or twelve. The formula can be: if a dollar earns one cent in one day, in six days it earns six cents, or in twelve days twelve cents. Or, if interest is related to percentage, then interest is a means of teaching percentage, and should be taught when one hundred is taught.

Proportion.

The matter of Proportion, or comparison of numbers, is a matter that should enter into the warp and woof of all arithmetic teaching. The relations, as well as the values of numbers, consist in comparison,—comparison of lengths, areas, volumes, weights, force, and time. The form of a ratio and the form of the relation of ratios may be used when the child understands that $\frac{1}{2}$ of $4 = \frac{1}{4}$ of 8.

Square root

Then we come to those great subjects that were so difficult in our youth. When should a child know square root? When should he know the square of a number? When he knows a number that can be squared, or of which the square root can be found, he should know them. When he knows four, he should know the square root of four. When he studies a square area, he should know its square root. He should know the square of three, and the square root of nine. The knowledge of the one is the knowledge of the other. Precisely the same thing can be said of cube root. When he knows eight, he should know that two is the cube root of eight. He can discover for himself the cube roots and the cubes with the necessary objects in studying volume. But it may be said that the processes of finding roots are difficult: they are difficult because there has been no leading up to the final processes. If the child works up to them, and knows what cube, square, and root are, when he comes to the higher processes the difficulties will vanish.

Cube root.

The present arrangement of subjects in Arithmetic is decidedly unpedagogical; and when we consider, again, that the subject of Arithmetic takes at least, to put it within bounds, one third of all the time spent in school, and that one third of the millions spent for children is put into Arithmetic, it is for us, as teachers, to reconsider the whole subject.

I have endeavored to show how illogically these subjects are arranged, and that the beautiful subject of mathematics, the subject that is essential to all human growth and all human thought, is an

inheritance of mystery, and the piling of mystery upon mystery has made a dark and dead wall in the way of education. It is an imperative duty of every teacher to reconsider this whole subject, to study the essentials of Arithmetic anew, and to apply them.

CHAPTER VI.

ATTENTION.

ATTENTION may be partially defined as a mental process immediately caused by the action of the attributes of external objects. This definition needs for its explanation a brief *résumé* of the psychology of the relation of external objects to subjects of thought or activities of consciousness. The first question to be considered is, What are external attributes?

Tentatively defined.

Relation of external energies to the mind.

Light is a mode of motion, differentiated into external colors. An external color, shade, or tint consists of waves of ether of a definite shape and a definite rate of motion. A wave of color touches the end organ of sight, the retina of the eye, and arouses in the brain its corresponding elementary activity. External sound is a mode of motion, or specialized energy, modified by the matter through which it acts. It consists of vibrations of air of different forms, particular shapes, and degrees or rates of motion. The special external energy which produces an elementary idea of sound touches the end organs of sound, and arouses a certain definite conscious activity, which, we infer, corresponds to the external activity or attribute which created it.

Light.

Sound.

Elementary idea.

All external attributes which definitely affect consciousness are simple energies acting through differentiated qualities of matter. The quality of the matter, we infer, determines the quality of the

Matter.

energy which acts through it, and, in turn, the quality of the energy changes the quality of the matter. That which is known of the nature of external colors and sounds may be inferred of touch, taste, and smell. Whatever matter may be in itself as a whole or in its differentiated qualities, all that we know of it depends utterly upon the effects of energy acting through it upon consciousness. Thus we infer that a certain attribute is an energy acting through a certain definite quality of matter. We say that that wall is yellow. The basis of the judgment is an act of consciousness, induced by the repeated action of that particular external attribute or energy we call yellow. We know little of the nature of that which differentiates light into this special external color. So far as the human judgment is concerned, all externality consists of simple energies or attributes, acting through matter, and by the action of these attributes upon the mind we are able to infer the nature of the external attributes themselves, and the qualities of matter through which they act.

External attributes.

Correspondence to an attribute.

An attribute is a simple energy acting through a quality of matter. Attributes create or develop by repeated action their correspondences in the mind. The correspondence in the mind to an attribute, or that which an attribute creates in the mind, may be properly called an elementary idea. An elementary idea, I repeat, is created in the mind by the repeated action of a definite external attribute. It is the simplest form of mental energy. An object, then, in its relation to the mind is a unity of attributes, or energies, acting through differentiated qualities of matter.

The brain is an organism created and developed

for the differentiation, reception, and action of external energies. If we accept the hypothesis of evolution, the nervous tracts and the great central ganglion, the brain, are themselves products of external energies acting through countless generations of successive human organisms.

The brain determines the energies which may act through it.

Although the theory of specialized functions of the brain is in great doubt, still the fact must be admitted that the brain, either as a whole or by means of its sub-organisms, differentiates, receives, and retains elementary ideas created by external energies. Without the initial action of external energies there can be no conscious life. In other words, all activities of consciousness depend fundamentally upon the action of external attributes.

Specialized functions of the brain.

To illustrate: Given a complete nervous tract for the transmission of the vibration of waves of light, and a complete brain organism upon which external colors may act, still without the action of these external colors there can be no consciousness corresponding to them. Or, to present this in another way, if the brain organism for the reception of color is perfect, and the optic nervous tract dead, there can never be in consciousness any correspondence to color. The same facts may be asserted of hearing and of all the other senses. Whatever the *ego* may be, this much is true, that the elements of all conscious activities are set in motion by external energies, and the unities of these psychic elements are known to and acted upon by the *ego*.

Action of attributes.

The organism of the brain, with its convolutions, its sub-organisms, its fibres and filaments, and all the differentiated parts of the sensorium, compre-

Function of the brain.

hending all the nervous tracts and the great central ganglion, determines exactly the number, kind, and nature of the external energies which may act upon and through it.

Mental action and brain action.

The brain contains the physical bases, the possibilities or potentialities of being energized by means of certain definite external attributes or elementary energies. Every conscious act, or even mental act below or above the plane of consciousness, has a physical basis; in other words, there can be no mental action whatever without a corresponding physical action on the part of the brain. The action of the brain, then, is the immediate medium by which conscious energy is known to the *ego*. The simplest energy of the mind is the elementary idea. Each elementary idea has an external cause, and that cause is the repeated action of its corresponding external attribute over its particular nerve tracts upon the brain. I repeat, then, that the number and kind of external energies which can act upon or in the brain are determined by the sensitiveness of the nerve tracts and the quality of the brain itself. There are countless attributes of color, sound, taste, smell, and touch, of whose effects the most highly developed brain can never be conscious, because the physical organism is not adequate to their reception.

Cause and effect.

The child born deaf, dumb, and blind.

We are informed by good authority that the child is born deaf, dumb, and blind; in other words, it has little, if any, conscious activity. Its brain consists of physical potentialities for such activities, but until there is due action of external attributes in arousing these latent possibilities there can be no conscious activities. The presence in consciousness of an elementary idea

corresponding to an external attribute determines absolutely the possibility of the possessor's knowledge of that attribute and the quality of matter through which the attribute acts.

Units of elementary ideas.

No elementary idea appears alone in consciousness. A state of consciousness contains units of elementary ideas which may correspond to external objects or units of attributes. The knowledge of external attributes as a whole depends utterly upon the corresponding unit of elementary ideas in the mind. The analysis of an external object depends entirely upon the analysis of its correspondence in consciousness. We have, then, on the one hand, the physical organism with capabilities of receiving and retaining elementary ideas created by external attributes; and on the other, the power of the mind to unite these elementary ideas into wholes, or individual concepts.

Analysis of external objects.

Automatic action of external objects

That which is of especial moment to us in discussing attention is the fact that all the *ego* has to do in the processes of the creation of elementary ideas and their unification into individual concepts, *is to present proper physical and mental conditions for external and internal action.* The *ego* cannot originally create an elementary idea, nor can it directly combine elementary ideas into wholes. This creation and unification is automatic and unconscious. It does itself, or, better, it is the product of eternal energy. Most of the mistakes in the science and art of teaching have arisen from the false notion that the *ego* itself can directly create fundamental ideas or individual concepts.

Instantaneous action of objects.

Verify this fact by some simple investigations or experiments near at hand. Look at the objects about you, and name them as rapidly as you can.

You say, "I *see* a house," "I *see* a flower," "I *see* a chimney." Listen,—and you have the same effect in kind,—"I *hear* a locomotive," "I *hear* a bird singing."

Synthesis, association, unification, recollection, the same mental act.

Shut your eyes and touch objects: "This is a desk," "This is an ink-stand." Theses uccessive acts of the mind are the results of objects or certain attributes of objects acting upon the mind and raising elementary ideas above the plane of consciousness. They appear to the *ego* as wholes or units of ideas. The synthesis, association, unification, or recollection (terms expressing the same mental act) of the ideas is perfectly unconscious and automatic, so far as the *ego* is concerned. The *ego* is conscious of the results only, of the units of elementary ideas. You can analyze, compare, classify the results, but you cannot directly unite or arrange the ideas. Of individual concepts, elementary ideas alone lie below the plane of consciousness. Every individual concept is dissipated into its constituents when it falls below the plane of consciousness. There is no difference in the kind of action of an object, whether it be the first or any subsequent act; the effect of an object is always the union of elementary ideas, which repetition has a tendency to accelerate.

Analysis, comparison, classification.

Attitude of the body and mind in sense action.

In each and every act of the senses, or the act of attributes in creating and energizing elementary ideas, the function of the being or the *ego* consists wholly in the attitude of body and mind. The rule is: the more receptive the organism, the more effectively external and internal energies act. Quiescence, or passivity,* describes the best

* Perfect passivity signifies the greatest power of reception.

condition of the mind for the most complete action of the senses,—perhaps inhibition is a better word to describe the state of the being: it means that adjustment of body and mind which best limits the mental action to the most effective results.

Inhibition.

I call your attention to this psychological fact with great earnestness, because many, if not most, of our pedagogical errors have their source in the mistaken generalization that unification of elementary ideas, or the formation of individual concepts, is a direct act of the *ego*, that the mind goes through a conscious process in the unification of elements. The "A, B, C" method, the countless phonic and word-building methods, the systematic, prescribed, and predestined object-lessons, are all the bad results of ignorance in regard to this powerful, persistent, and spontaneous action of the mind.

Errors arising from not understanding the unconscious process of synthesis.

Conscious activities are pure energies. We infer that the brain is the physical basis of these activities; we also infer that every conscious act has a physical basis. Elementary ideas, for instance, are created below the plane of consciousness by the action of external attributes, and as these elementary ideas, by repeated action of the external energies, become stronger, they rise to the required degree of activity and, under the right conditions, appear above the plane of consciousness. The elementary activities below the plane of consciousness never cease in their action so long as the corresponding physical power of the brain remains. They rise above the plane of consciousness, present themselves in units or individual concepts, and in turn sink below the plane of con-

Creation of elementary ideas.

sciousness, dissipated into their elements. All the *ego* has to do in both unification and dissipation is to present the most economical bodily and mental conditions.

Recapitulation.

To recapitulate: first, attention relates to the action of external objects upon consciousness; second, the psychological fact common to all objects is that the mental effect of an object in consciousness is its correspondence to the object itself; third, this correspondence or individual concept consists of elementary ideas automatically synthetized; fourth, the elementary ideas of which an individual concept is the synthesis or the unit, were originally created by the action of external attributes upon the brain; fifth, the organism of the sensorium determines primarily what attributes shall act upon it, and consequently what elementary ideas shall be there created ; sixth, all elementary ideas, or correspondences to external attributes, appear in consciousness in complex units or individual concepts; seventh, conscious activities are pure energies, which, we infer, act through matter (the brain), but present themselves to the *ego* as pure, non-spacial, non-ponderable, differentiated energies.

What is an educative act ?

Experience proves that every human being is conscious of mental activities during his waking hours, from the dawn of consciousness to the close of mortal life. Waves or states of consciousness succeed each other in general with great rapidity, and this succession of conscious states cannot be prevented by acts of the will. These conscious activities consist of units of elementary ideas, and the inferences which the *ego* derives from them. Every human being has these states

of consciousness; nevertheless, comparatively few of the human beings born upon earth are becoming educated. Waves of consciousness, or a prolonged succession of conscious states, induced by externality, or by the *ego*, are not in themselves educative. One may have the full use of all his senses, the senses may be in continual action, one may hear language all his life, one may read continually, and still never have what may be called a genuine educative mental action. An educative act always conditions an educative subject and an educative self-effort; the act is effective to just the degree that self-effort is intense.

Spontaneous activity and intense activity, discriminated.

What is intrinsically an educative act? Self-activity is the fundamental principle of education—a principle universally believed and generally neglected. It is, however, of vast importance that we discriminate with exceeding care the exact functions of self-activity and the conditions which make self-activity possible; that we in some measure comprehend the physical and mental conditions which are the bases of conscious energy, and the spontaneous, instinctive movements and creative power of that energy by means of those conditions. In comparison with creative power and created results, independent of self, self-activity sinks into insignificance. Heredity, birth, physical organization, the instinctive sympathetic acts of body and mind, digestion, breathing, and sensation, it goes without saying, are not the direct products of volition. It is a correct interpretation of an old theological doctrine when we affirm that everything is done for man; that external power creates and sustains him, gives him marvellous powers of body and mind, and is ever

ready to render divine assistance at every step of his development. I say *divine* assistance, because origin and source cannot be discriminated among all the mighty energies that create, nourish, and sustain an organism of life. One differentiated energy cannot be called divine and another material with scientific accuracy.

"To make such a soul,
Such a body, and such an earth for insphering the whole."

Notwithstanding all that is done for man, the eternal loving power that creates and is ever creating him, his individual development is a result of self-activity. Education depends upon the use the being makes of the conditions in which he finds himself the centre. As he uses that which is given him and done for him will he be educated. The highest economy of self-effort may be attained only by a righteous discrimination between that which is done for the being and that which the being can do for itself. Overstepping the boundaries of self-effort results in weakness rather than strength; the overstraining in effort, the fearful consciousness of self, the mental entanglement in forms of thought expression, are all the outcome of misdirected self-effort. Poise, equilibrium, passive and receptive attention, mature reflection, ease in expression, and consciousness of power spring from wisely adjusted self-effort. "Be still, and know that I am God."

An act of attention defined.

The power of the will in attention consists in holding the body and the mind in the most economical attitude for the most effective and complete action of external attributes through nerve tracts upon consciousness. It consists, first, in

the inhibition of the agents of the body, and not in immediate use, or in so co-ordinating them that they will best subserve the purpose of the action of external energies, or energies external to consciousness itself. It consists, second, in controllingor inhibiting consciousness so that no other activities shall be present except those directly induced and aroused by the external objects. How small a part the will plays in comparison to that which is actually done! How indispensable is the action of the will in inducing the best conditions for mental activities! The danger comes when the *ego* ignorantly attempts to do that which does itself, or is done by immutable laws, not controlled but conditioned by the *ego*.

The ego.

The particular or special interest of the *ego* dominates and controls the body and the mind in an act of attention. The principal act of the will consists in the stopping, hemming in, o. obstructing the onward movements of consciousness, thereby INTENSIFYING conscious activities. Let me illustrate this by acts of reflection, which are the same as acts of attention, minus direct external stimuli. You will please think of the house in which you were born. Instantly, when I say "house in which you were born," there comes a mental image, an individual concept, into your mind, brought there by my words. Hold that image, that individual concept, by an act of your will, and what is the result? The first synthetic result is a mental image with dim outlines. It immediately begins to build in elementary ideas of color; forms rise above the plane of consciousness and complete the first vague outlines. You enter the house, you go from room to room; the floors, the ceilings, the paper, the furniture,

An act of conscious intensity illustrated.

all enhance the individual concept. Associations then come in; old experiences, former judgments, emotions without number, crowd this picture. What have you done? By an act of your will you have held this state of consciousness, and in holding, the picture has been enhanced, filled up, *intensified*. The longer you hold the central concept corresponding to the house the more ideas will rise, fill, and intensify it; the act of recollection is continually enhanced by your mental attitude. You do not bring in certain elements, certain subjects of thought in relation to the central subject—*they come in themselves*. You cannot by an act of the will create an elementary idea—you cannot directly recollect, unite, synthetize, associate ideas, but you can control the conditions necessary to the effectiveness of these acts.

Limitations of the ego.

Hemming states of consciousness.

Attention means stopping the otherwise continuous flow of conscious states; it means the inhibition of all extraneous activities; it means the concentration of the will upon certain definite conscious activities aroused by the objects, which the *ego* is to know, to analyze, to compare, to classify, and to make the basis of all inferences.

Power of attention.

Let me illustrate further: in acts of attention in hearing language, the words spoken act upon consciousness in the exact degree in which the hearer holds his mind to the subjects or the thoughts aroused by the speaker. Of course this depends very much upon former experiences; but the point I have to present to you is this, that in hearing, in listening to a sermon or an oration, for instance, you hold your mind by a direct act of the will, inhibiting all foreign conscious activities, confining the activities to the results of the spoken language upon

consciousness. You read; a succession of mental pictures, of inferences and judgments, rapidly succeed each other. Such reading may, or may not, be educative; but in an act of attention you limit all your activities to the direct effect of the sentences upon consciousness. You hold, by an effort of the will, ideas, conscious activities aroused by written words, and by the very holding the associations already spoken of take place; you have clear concepts which give rise to a succession of inferences, and are in the highest degree educative.

Acts of attention in reading.

At the risk of much repetition, allow me to again refer to my definition of the conditions of attention. I may call them the mental and physical conditions of acts of attention. *Attention is holding the whole being, body and mind, in the best and most economical attitude for the action of external attributes or objects upon consciousness.* I would call to your mind the first definition I gave of attention. Attention is a process of mental or conscious action stimulated, excited, aroused, induced, or caused by the attributes of external objects upon consciousness. I have already discussed the vast influence of the sensorium, including the nervous tracts and the brain, together with the creating and stimulating action of external objects in and through the brain upon consciousness. All education is by self-activity, and, at the same time, it may be said that self-activity is a evidence of human growth beyond the threshold of the educative stage; that the basis of human development, that is, heredity, the physical organism of the body, and the spontaneous action of external attri-

Definition restated.

Education by self-activity.

butes, form the foundation or present the conditions absolutely necessary for self-activity. For instance, the self-activity of attention consists in putting the whole being, body and mind, into the best possible attitude for the action of external energies upon consciousness. While the being itself, and its conditions, the external attributes, are by no means the products of present self-activity, and in the comparisons of the conditions of energy, and the nature of the energies acting upon consciousness themselves, both past and present, self-activity must assume a minor place; still, at every step and every stage of education, the action of the will in controlling the organs of the body in such a way that the most complete action of consciousness can take place must be recognized. In other words, the whole environment of consciousness, which consists of the brain, the body, and external energies, makes self-activity possible, and determines its nature, its kind, and the probabilities of its continuity.

Three modes of attention.

There are three modes of attention or study: first, *observation;* second, *hearing-language;* and third, *reading.* These three modes come under the two definitions I have given of attention. The first definition is: *The action of the attributes of external objects upon consciousness arouses certain definite conscious activities.* The second definition is: *Attention is holding the being, body and mind, by an act of the will, in the most economical attitude for the action of external attributes or objects upon consciousness.* In other words, attention is educative thinking. Thinking, or continuance of conscious action, is not in itself educative, it becomes educative only when the con-

Thinking not in itself educative.

scious action is intense and the conscious activities are immediately needed for development. Each and every state of consciousness, from the first action of consciousness to the last, in every human being, contains in itself every *kind* of possible conscious action. The fundamental action of consciousness is synthesis or association. Synthesis, association, recollection, remembrance, imagination, are all one and the same act in kind; that is, the same action takes place and the same laws control the action. It is true that an act of synthesis, in which are included the other acts I named, may have different causes. These acts may have direct external causes, or may be the products of the action of the *ego* without direct external stimuli.

Each state of consciousness consists of all the kinds of possible conscious action.

Synthesis.

The second act of consciousness in which the *ego* is the immediate cause is inference or judgment. Acts of inference may be classified as acts of recognition, analysis, comparison, classification, and generalization. Allow me to repeat, then, what I consider to be the most important fact in all psychology—that each and every act of consciousness contains in itself every kind and variety of acts of which the human being is capable. Development consists, then, not in the introduction of new *kinds* of conscious acts, but in the continued *intensity* of all these acts. The intensity of an act of consciousness means that the contents of the acts are to be continually enhanced by new psychic units, or individual concepts, and more vivid elementary ideas, consequently, making possible those inferences which approximate the truth. Thus, acts of observation, hearing-language, and reading are identical in *kind* of mental action,

Inference.

Intensity of conscious activities.

the differences consisting in the differences in external causes and intensity of effects.

The three modes of attention defined.

You may desire, at this point, definitions of the three modes of attention, which will be consistent with the definitions of attention itself. Observation consists of mental or conscious activities aroused by the continuous action of external objects. Since the same definition may be given to hearing-language and reading, it is necessary to make a definition which will differentiate observation from the other two modes of attention.

Educative value of an act of observation.

The educative value of an act of observation consists in the individual concept which corresponds to the object acting upon consciousness. Observation is the continuous action of an object upon consciousness for the purpose of developing and intensifying its corresponding individual concept. In the mere casual action of objects, through the senses, crude, incomplete, and inadequate concepts are produced; but by the continuous action of one object upon consciousness it will be readily seen that the concept corresponding to the object acting is intensified—it is filled up, enhanced, made to approximate adequacy. This individual concept is a direct factor in itself in the development of the mind in which it acts; and becomes, through the action of observation, more and more a complete basis for inferences of analysis, comparison, classification, and generalization.

Individual concept.

Two classes of objects.

Two great classes of objects act upon the mind. One we may call, for the sake of classification, non-symbolic objects. A non-symbolic object is one whose correspondence may have a direct educative value. The other great class of objects

consists of symbols. A symbol is an external object made or invented by man to arouse in consciousness certain definite activities. The conscious activities which a symbol arouses or stimulates we will call in this discussion *appropriate activities*, in contradistinction to corresponding activities, and it is well to make a careful distinction between the two. Corresponding activities are the activities directly aroused by the object itself. The first action of any object, whether a symbol or non-symbol, is to arouse its correspondence in consciousness. But the objection may be fairly made to this definition of the action of objects, that usually an individual concept is the product of one set of attributes acting over one special nervous tract, that the corresponding elementary ideas aroused by these attributes arouse others that have formerly been associated in the same unit or individual concept, and that therefore the action of all objects is, in reality, symbolical. There is, however, a distinction between the acts of observation, hearing-language, and reading. A symbol has but one function, it was made for but one purpose, and that purely a mental one. A pure symbol is used to arouse in consciousness certain definite activities, which do not correspond to any part of the object itself. The correspondence to a symbol in itself has no educative value; or, in other words, the immediate effect in consciousness of a pure symbol has no organic relation to development, its relation to development of educative action consisting entirely in the effect of the correspondence in recalling appropriate activities.

A symbol.

Appropriate activities.

Corresponding activities.

Symbolic action of all objects.

Immediate effect of symbols.

Each and every object has one immediate effect

upon the mind, let me repeat, and that is the production of its correspondence, which is in itself an individual concept. This immediate effect, correspondence, or individual concept, arouses other definite activities which I have called appropriate activities. You can test this very easily. I write upon the board certain words, for instance: "horse", "cow", "goose", "fence". While I am writing you shut your eyes. I say, "Open your eyes and tell me the immediate effect of these objects, that is, these written words, upon consciousness." You are able to say immediately, "The horse that I thought of was chestnut, or white; it was running, or standing still." Thus, these words, that I have written on the blackboard, are immediately functioned. They arouse their appropriate activities. But suppose you were not acquainted with the language used, and that I should write the words "Pferd", "Kuh", "Gans", "Cavallo", "Hest". These objects have the same functions as the others, and produce their *immediate* effects, but those effects in consciousness do not produce effects for which they were made; they are consequently not functioned in your mind.

Effects of words illustrated.

Oral and written words are objects: they have length, breadth, and thickness, and they act upon consciousness precisely like any other object; but if these effects do not immediately become causes and arouse other definite conscious or appropriate activities, they are of no immediate use.

Two classes of symbols. Partial symbols.

Symbols may be divided into two classes. One class I will call partial symbols. Partial symbols consist of pictures, drawings, models, and all objects not purely symbolic, which are made to

awaken in consciousness certain definite activities. The conscious activities awakened by a partial symbol, it will be seen, do not fully correspond to the object awakening them. In other words, the direct effect of a partial symbol is precisely like any other object; but this direct effect arouses definite activities, and the effect itself becomes a part of those definite activities, a part of the individual concept aroused,—thus I call them *partial*. For instance, a picture arouses its correspondences, and this in turn arouses its appropriate activities, and the correspondence to the picture sinks, to use a figure of speech, into the individual concept itself.

Pure symbols.

In order to make my meaning clearer, I will attempt to describe the second great class of symbols, which we will term pure symbols. A pure symbol, like a partial symbol, is an object made to arouse certain definite or appropriate activities; but it is also an arbitrary invention made to produce a certain definite effect in consciousness, which in no point corresponds to the cause. A partial symbol, for instance a picture, functions itself by the same kind of action as a pure symbol. You will understand me when I say that a little child sees a picture and knows what it is, or a statue and knows what it is: that is, the partial symbol has an immediate effect, and needs no other conditions than its presentation or its action upon consciousness; but a pure symbol requires the presentation of certain definite conditions for its use in consciousness. A pure symbol must therefore go through a mental process of functioning. This process of functioning, for instance, written or printed words, we call teaching reading. In-

Process of functioning a symbol.

deed, the teaching of reading, at every step, from beginning to end, consists in presenting conditions for functioning words. The law under which all words are functioned will be carefully discussed in the succeeding talks.

Hearing-language.

Hearing-language is thinking by means of the action of oral words, arranged in sentences. The process of hearing-language is a mental process caused by the action of external objects called oral words arranged in sentences. An oral word is just as much an object, as I have already said, as a written word, a tree, or a mountain. The mind does not act upon the word, but the word upon the mind; and therefore upon the attitude of the being depends the power of hearing-language after the words have been functioned.

Reading defined.

Reading is thinking, or mental activitie aroused by the action of written or printed words arranged in sentences. Precisely the same reflections may be made upon reading as upon the action of oral language; the conscious activities aroused are the same in kind. It is often justly urged that an act of hearing-language, or reading, is not in itself an act of attention, or does not arise to the dignity of an act of attention; but I beg you to bear in mind that I am discussing education, and also the fact that educative acts consist wholly of intensity of mental acts in hearing, and intensity of mental acts in reading. Observation is an intense act of consciousness. Educative hearing-language is also intensity of conscious acts. Study of text is intense reading. The three modes of attention are means of intensifying conscious activities.

Function of observation.

The function of the object itself in an act of observation is to intensify its corresponding individ-

ual concept; the function of a pure symbol is to arouse appropriate activities. The correspondence to a pure symbol has no direct educative value. In an act of observation the mind is absorbed in the direct products of the object in consciousness. In the acts of hearing-language or reading the mind should be absorbed in the appropriate activities, with the *least possible consciousness of the effects of the words.*

The body an instrument of attention.

The body, with all its physical organs, its nervous tracts, and great central ganglion, the brain, is an instrument for the action of external attributes. I have already presented the fact that the organism itself determines the nature, the number, and kinds of external attributes which may act through it. These sense products form the basis of all self-activity, and that self-activity has a very prominent part to play in attention.

An act of attention analyzed.

An act of attention may be analyzed as follows:

(1) The external object or objects consisting of simple energies which act upon consciousness.

(2) The physical condition and attitude of the body in an act of attention.

(3) The conscious activities aroused; that is, the intellectual action in an act of attention.

(4) The motive of an act of attention.

Motive explained.

By motive I mean that which primarily impels the *ego* to attend continuously. It may not be easy to define or analyze motive. The content of motive is usually interest heightened by the anticipated pleasure which the being believes will result from the act. Every self-act has a motive. This motive may have for its content immediate pleasure or the pleasure of fancying subsequent pleasure. It is sufficient, however, for our present discussion

to present clearly this analysis that I have already given: external object, physical action, mental action, and motive. In the economical act of attention these three factors immediately succeed each other, or, perhaps not so scientifically stated, are simultaneous. *In other words, there should be perfect unity of action.* This fact is illustrated in all spontaneous acts of attention. The motive is aroused by the object presented, and under that motive the act is sustained, the thought stimulates emotion, and the body becomes an unobstructed medium through which the attributes act. This unity of action or effort of the whole being is the central educative moment; it is in education a supreme act, bringing about the conditions necessary to a most economical use of the body as an instrument for the action of external energies.

Physical attitude of attention.

In order to explain this more fully, allow me to speak of the physical attitude of attention. The attributes or external energies act through certain nerve tracts. The nature of the nerve tracts over which the attributes act determines the attributes which act through them. In a complete act of attention, the *ego*, through the will, controls the whole body; all extraneous muscular activities are inhibited, that is, physical action is limited to the reception of certain definite external energies. Special nerve tracts are cleared for action. That which is true of muscles and nerve tracts, is just as true of the brain. We know, or should know, from long observation that the body, when it acts most effectively, acts as a whole; that although one organ or one sense tract may be the centre of that action, still the whole body, every organ, every muscle, and every nerve, contribute to the one

Unity of the whole being in an act of attention.

central action; every organ, every muscle, every nerve, concentrate and enhance the one central act of attention. Or, to put it in another way, just so far as the action of the whole body is inhibited, and therefore concentrated upon the one act of attention, just so far will the intellectual action be enhanced. On the other hand, any part of the body, any portion of the muscular system, that does not enter into this act of attention weakens the act.

Unity of action illustrated.

We are all instinctively students of acts of attention in others, and I think if we will but reflect a little upon our own somewhat spontaneous and intuitive generalizations, we will come to a common conclusion. A speaker watches his audience, —it may be an individual, it may be thousands of people; he judges whether his words have their desired effect or not by the physical attitude of those before him. The slightest mark of inattention discourages him, and, on the other hand, signs of attention prompt him to better thought and expression. The story-teller's first thought is: Are my auditors listening? He judges by their attitude; a movement of the arm, the head, the facial expression, in fact the whole body tells him whether his words are having their effect or not. Artists portray animals in acts of attention; a fawn or rabbit in the act of listening. A critic who detects in the attitude of the body any lack of coördination or unity in so far argues the failure of the artist. In a word, there is a complete physical unit of action in a perfect act of attention. The organs of the body, the muscles, the nerves, the whole sensorium, contribute to the one central act. Or, to put it upon the negative side, if the body is not in a perfect physical attitude of attention, if

Attention in Physical Training.

the arms or legs are not disposed for the best action of external stimuli, then the conscious act is obstructed. The maximum physical action in attention is the concentration of all muscular and nervous action to one act. If, then, there is a complete normal physical attitude of attention, if the blood in its rapid flow through all parts of the body enhances the complete act, then educative acts of attention have a great influence in developing the body, not only developing it in health and strength, but enhancing its great function as an instrument of attention.

Motive of Physical Training.

The motive of all physical development should be the training of the body as a perfect instrument of attention and expression, for action and reaction upon external objects. The perfect physical attitude of attention is a healthy attitude. What has been said of the whole body may be said of the brain. As a physical organism, the will has the power to inhibit the action of the brain, and to concentrate it upon one conscious state; and further, the will has the power to bar out extraneous conscious activities by hemming in intrinsic conscious activities, or by excluding that which is not pertinent to immediate moments of attention. One central point in the theory of concentration is that in all acts of attention there shall be perfect unity of action. An economical act, an intense act, is that perfect unity of action in which every part of the body, every fibre of the brain, enhances the mental act; and conversely, any failure to inhibit the action of the body or the brain, any disconnection or lack of response on the part of any agent or sets of agents, renders the central act of attention incomplete.

Great importance of Perfect unity in acts of attention.

The importance of the unity of the whole being in all educative acts cannot be overrated, for the reason that unscientific teaching and training may permanently break or disconnect this unity, and thereby weaken both body and mind. Let me illustrate this in an act of reading. You will bear in mind the analysis before given in relation to acts of attention:

(1) External energies.
(2) Physical action.
(3) Mental action.
(4) Motive.

How unscientific teaching can destroy the unity of action.

An act of reading is brought about by the action of printed words arranged in sentences upon consciousness. In such acts there must be an impelling motive, the physical attitude of attention, the mental results, and consequently the instantaneous action of the forms of the words. The right motive should precede every act; the most economical mental acts should take place, superinduced by a complete physical attitude of attention.

The least possible attention to the forms of words.

Suppose the motive is attention to the forms of the words, then there can be no educative effect. If the motive is brought to bear entirely upon the forms of the words, the real motive must be in abeyance; the mental action consists entirely of the correspondences to the words themselves, and there can be no genuine thought action. The unity of the action is broken, and if this systematic teaching, in which the forms of the words are the end and aim of the teacher, continues, the breaking up of the unity of action will be effectual, and mental weakness in reading and study will be a permanent result. The word should perform its function

instantly ; there should be the least possible attention to the forms of the words. It is possible, under the scientific teaching of reading, to absorb the mind to such an extent that the action of the words becomes unconscious or automatic. Its opposite is also possible: the habit may be easily cultivated with little children of complete absorption in the forms of words, and anything like clear, lucid, enlivening thought prevented. The reason why the acquisition of the forms of words is made the end and aim of much teaching is that great difficulties are seen in the objects themselves, the words, and the whole power of the child is put on the acquisition of dead forms, with the supposition that at some future time thought may be aroused by them or expressed through them.

Interest overcoming difficulties.

That which has been left almost entirely out of the discussion of how to teach the first steps in reading has been the means needed to arouse strong, continuous, and cumulative interest in the thought expressed by the words themselves, and how to develop that motive with its content of interest which will most effectually overcome seeming, but not real, difficulties.

The habit of attention.

The educative habit of attention is purely a cultivatable one. In simple spontaneity, without direction, there is very little development of the habit of attention. There may be many acts of attention, but they cease before they reach the educative point, or they have no organic relation each to the others. The cultivation of the habit of attention is the main factor in education, —the habit of observing closely, listening intently to language, and of reading intensely are the fun-

damental means by which self-activity is induced and developed.

Brain exhaustion by acts of attention.

The cultivation of the habit of attention depends fundamentally upon the condition of the body, the brain, the nerve tracts, in fact the whole physical system. Teachers should study and thoroughly understand how long an act of attention can be sustained. This depends entirely upon the strength and endurance of the brain and nerve power, enhanced by the whole body. This can be illustrated by physical exertion: when a muscle is exercised, the waste matter is eliminated, and there is an immediate flow of blood to the muscle to repair the loss. If the exercise is continued too long, the waste matter cannot be carried off fast enough, the flow of blood is insufficient, and exhaustion sets in. Continue the action of the muscle longer, and the result is disastrous. Physical exercise carried beyond the point of exhaustion, it will be granted by all students of physical training, weakens instead of strengthens the body. Besides—and this is the main point—there is always a dislike of exercise, and an unpleasant emotion aroused, by the weakening of the muscles through over-action.

Muscular exercise.

Too long-continued acts of attention exhaust the body and weaken the mind.

The human brain is the most delicate, the most complex, physical organ in existence. Whatever is true of the over-exercise of a muscle is still more strikingly true of the over-exercise of the brain. An act of attention is conditioned entirely upon the physical strength of the brain,—upon the elementary ideas held or retained by the physical qualities of the brain below the plane of consciousness. In an act of attention the blood flows through millions of delicate arteries to reinforce and sustain the action of the brain. If a muscle becomes ex-

hausted after repeated acts of the same kind, how much more quickly the delicate fibres of the brain will become exhausted! The teacher who really strives to develop pure acts of attention on the part of the child should remember that no matter what the object of attention may be, how strong the motive which prompts the interest, or how delightful at first the mental act, exhaustion sets in with children very quickly.

In fact, while I use the little child for illustration, it is equally true of all persons who have not trained themselves in the habit of attention. You might perhaps try the experiment on yourself by listening to some sermon or lecture upon philosophy or pedagogics. A person who can listen for forty minutes, for instance, with the closest attention to any elucidation of an unfamiliar theory has an immense power of attention; in fact, has attained the one pre-eminent habit of education.

Cultivated power of attention.

Habits of attention very slowly cultivated.

But habits of attention are acquired with exceeding slowness. The moment the brain of the child becomes exhausted, no matter, as I have already said, how beautiful the object studied may be in itself, the immediate result is a sort of mental nausea or disgust with the subject. A weakness is caused which afterwards prevents free action, because the moment the object, or subject, is again presented the associated emotion takes possession of the mind. You know a subject and love it, and take delight in studying it; in fact, no one can ever study any subject really and truly without loving it, for truth is beautiful always. Try to teach these same truths so grand to you, to the child, and you are surprised at his attitude of

disgust. In nine cases out of ten this undesirable result is the product of brain exhaustion. Under the control of traditional education, the false meaning of the word "thorough" has done more damage than any other word. You feel, as a teacher, that the child must see as you see, have the same action that you have, and you try to bring it about by the proper conditions. He cannot have the same action, and when he becomes exhausted through futile efforts to attend, the product is disgust. He dislikes the topic because it is beyond his thought grasp, and his dislike is a barrier to future action in that direction.

Great mistake in cultivating attention.

In reality there is no need whatever, in careful teaching, of this brain exhaustion and its terrible mind-weakening results. The child without guidance observes briefly many objects in succession. He does this spontaneously, without exhaustion. Change rests the brain. A great variety of related objects should be used in teaching, extending gradually the time of each act of observation, so that the healthy interest may be sustained. The direction that I would give to all teachers is Watch the child, watch his attitude of attention. Is it spontaneous? Is the light of pleasure in his eye? Is interest the motive which controls him? So long as that exists there is no danger, but just before it may cease—I mean the feeling of pleasure—the action should be stopped.

Watch the child.

In the same direction there is another great pedagogical error. That is the attempt to sustain attention day after day upon one series of subjects. The old pedagogical belief was that the child must take one subject, and observe, investigate, classify, and follow that subject logically to its higher gen-

Following one series of subjects.

eralizations. Let us fall back upon the premise, which is absolutely true, that the organism determines that which shall enter. The growth of the organism is exceedingly slow, the individual concepts are at first obscure and vague. The conditions are there for spontaneous, not scientific, classification. Endeavor, in a course of lessons which require attention, to force the child's mental acts in any one direction so that he may arise to generalizations through series of inferences based upon careful observations, and you will produce the same effect that I suggested in regard to brain exhaustion in prolonged and futile acts of attention. You disgust the child with the subject, and render all after-study difficult in the extreme.

The child begins all subjects spontaneously.

In the plan suggested in the discussion of the central subjects I beg leave to recall to your mind that the child begins all subjects spontaneously; at least he is interested in everything, and begins instinctively the investigation of all subjects known in the curriculum of any university, before he is six years old. He goes from bird to bush, from grass to flower; in fact his whole environment acts in succession upon him, and there is no exhaustion. The teacher is there to present conditions so that these external objects will act *just a little more*, sufficient to keep the interest up, and not enough to induce exhaustion and consequent disgust and dislike. I had an excellent opportunity to observe the so-called logical plan of taking one object and using it exhaustively. The orange was taken for a course of lessons: It was modelled, painted, drawn, and studied; it was peeled, and the skin was observed; it was then cut

into parts, and the pulp and seed observed, drawn, painted, and descriptions written.

The danger of trying to exhaust one subject illustrated.

With a firm belief that children instinctively love nature studies, I could not at first understand why, after an intense delight in the first lessons, the interest waned, flickered and went out. The method, and not the subject, was wrong; it was a futile attempt to force the child beyond the possibilities of his mental power.

The method* that we have now adopted, continues that which every child has already begun; keeps interest keenly alive by using a great variety of subjects; makes the ever-changing phenomena of the "rolling year" the basis of observation, experience, and investigation: presents the same subjects each successive year, to be met by continually enhanced interest, power to observe and to reason. Beyond the limits of the pupil's capacity lie the sterile regions of empty word learning.

Prejudgments.

One other error as potent for evil as brain exhaustion and logical sequence, is study with a fixed purpose to *prove* an hypothesis presented by the teacher, or previously formed by the pupil. If there is any prejudgment or fixed supposition of what will be found or proven, there can be no free act of attention. To use a figure of speech, the mind goes out to the object with a fixed motive to prove something that is already in the mind. Under such a motive there can be no real investigation in regard to the truth. The attitude of the mind is merely, "There is something I wish to prove, and this act of attention will

* Wilbur S. Jackman, in "Nature Study."

prove it." The attitude of prejudice is a cramped attitude of the mind, into which nothing can enter, where there can be no enhancement of facts, and no fresh, vivid, and original inferences. I can illustrate this by conventional drawing. The pupil learns to draw the typical fish from a flat copy. He gains, therefore, merely a conventional image of a fish. Afterwards in the study of zoology, when required to draw a real fish, the pupil naturally recalls and reproduces the conventional form, and the benefit of self-effort in continuous observation is lost.

Teaching.

What is teaching but the presentation of external conditions for educative self-effort? The work of the teacher in educating is confined to the presentation of these conditions. All these conditions consist of objects and their movements in space. It is of tremendous importance that the teacher appreciates the philosophy of external energies, and the psychology of their creative and stimulating action upon the mind. All education is by self-activity, but when this self-activity oversteps the bounds and tries to do that which nature does perfectly herself, it defeats its own end. Self-activity has certain boundaries; for instance, in attention the boundary is the holding of the body and mind in an attitude for the action of external energies. I repeat this over and over again, that a certain overstraining of the mind in self-activity destroys its purpose.

> "The eye—it cannot choose but see
> We cannot bid the ear be still;
> Our bodies feel, where'er they be,
> Against, or with our will.

Nor less I deem that there are Powers
Which of themselves our minds impress;
That we can feed this mind of ours
In a wise passiveness.

Think you, 'mid all this mighty sum
Of things forever speaking,
That nothing of itself will come,
But we must still be seeking."

Definition of education.

Education may be defined as the development of the attitude of the being towards truth. Over-action, overstraining, and prejudgment are obstructions in the path towards freedom, for while self-activity is of the utmost importance, still undue interference on the part of the *ego* may be such as to obstruct rather than further the highest development of the being.

No one can really ever study a subject without loving that subject.

Every subject of thought, every object of attention, truly studied and freely observed, must arouse in the mind emotions of pleasure. In a word, the test of whether you know a subject, whether you are really studying a subject, is your love for that subject. I think I can say positively that no one knows a subject unless he loves it. On the other hand, the test that proves that one has never studied a subject, is the feeling of satisfaction when he has *finished it*, when he has "been through it," passed examination, and the stint-work is done.

Goal of all true study.

All true study develops an apprehension of unity —unity of design, unity of purpose, unity of love. By these tests, and with this goal, educative acts of attention may be cultivated. The opportunities for attention in the central subjects of study are infinite,—infinite in direct observation and boundless in reading and hearing-language. The highest

duty of the teacher is to adapt the right conditions for mental action to the individual mind.

Every step in the right direction brings new light and new love, arouses curiosity, enhances desire, and stimulates to prolonged and persistent study. Every fresh discovery opens new vistas, deepens perspective, and cultivates humility, that poverty of spirit which leads upward to the Kingdom of Heaven.

"And thus looking within and around me, I ever renew
(With that stoop of the soul which in bending upraises it too)
The submission of man's nothing-perfect to God's all-complete,
As by each new obeisance in spirit I climb to his feet."

CHAPTER VII.

OBSERVATION.

I PROPOSE to discuss observation as a mode of attention, its relations to the central subjects of study, its place in teaching, and its educational value.

Observation may be defined as a mental process induced by the continued action of objects or units of attributes upon consciousness. The mental action involved in observation consists fundamentally of the units of elementary ideas, or individual concepts, aroused by objects acting upon consciousness. To the conscious products synthetized by external objects, we may give three names with the same meaning: first, conscious effects of the objects; second, mental correspondences to the objects; and third, individual concepts. The phrase "correspondence to the object," is a conventional term to show the relation of the mental effect to the external cause. *Individual concept* is a term used to limit a unit of elementary ideas, which the *ego* discriminates from all other conscious entities. The adjective "individual" is used to indicate the discriminating power of the *ego* in defining a particular unit of elementary ideas, and in separating in thought this unit from all other units or individual concepts. The relation of the *ego* to external objects in observation, consists in holding the body and mind in the best possible

Observation defined.

"Correspondence."

"Individual concept."

"Individual."

Relation of the ego to the external objects.

attitude for the most economical action of external energies.

Definitions.

It may be well for me to repeat a few definitions, which may differ from the common psychological terms. I use them here for the sake of definiteness or to avoid ambiguity.

External attribute.

(1) An external attribute is a simple energy acting through a particular quality of matter upon the brain.

Elementary idea.

(2) An elementary idea is the product in the brain of an external attribute. The causes and conditions of its existence are:

(*a*) Physical power of the brain to receive the action of the external attribute.

(*b*) The repeated action of the attribute or external energy over special nerve tracts.

Individual concept.

(3) An individual concept is a synthesis or unit of elementary ideas with three causes:

(*a*) The direct action of the attributes of the object upon the brain, the effect of the object itself being to synthetize elementary ideas as they rise above the plane of consciousness.

(*b*) The action of symbols, pure and partial.

(*c*) The action of the *ego* in bringing about the necessary conditions for the union of elementary ideas into individual concepts.

The first and second action are through the senses, and the third is without the immediate aid or stimulus of the senses.

Relation of elementary ideas and individual concepts to knowledge.

The relation of elementary ideas and individual concepts to knowledge of the universe may be stated as follows: first, an elementary idea is the absolute basis of all knowledge of its corresponding attribute, all externality so far as mind is concerned consisting of attributes; second, the individual concept corresponding to an object

is the absolute basis of all knowledge of that object. Or, to present this matter in a somewhat clearer light,—upon the individual concepts as here defined, depend all elementary inferences: first, the simple inferences of recognition; second, the inferences of analysis of the individual concept; third, the inferences of comparison; fourth, the inferences of classification; and fifth, the related inferences of generalization. An equation may thus be formulated: as are the individual concepts, so may be the inferences, analyses, comparisons, classifications, and consequent generalizations.

Inference, recognition, analysis, comparison, classification, generalization.

The individual concepts of children, and the individual concepts of most persons who live and die in this world, are exceedingly vague, crude, and obscure. That is, they are crude, vague, and obscure in comparison with any approximation to adequacy. This can be tested in many ways. Try to form a mental image of that which you have seen thousands of times, and you will immediately be seized with a desire to see the object again; that is, you have a feeling of its obscurity or incompleteness. If there is a demand made upon you to paint, draw, or model an object which you have seen over and over again, the desire to see the object becomes still more intense. You feel a necessity for a more continued action of the object upon your consciousness, because you are aware that the concept corresponding to it is imperfect. Upon the growth, development, and approximation to adequacy of individual concepts depends almost wholly the development of intellectual power.

Crude individual concepts.

It may be well here to make an attempt to

An adequate concept defined.

define an adequate concept, a concept which perfectly corresponds to the attributes of an object; to the arrangement and relation of those attributes to the whole object. First, an individual concept must have for its content just the number of elementary ideas that its corresponding object has of attributes. Second, the individual concept must have its elementary ideas correspondingly arranged and related to each other, exactly as the attributes of the corresponding object are arranged and related to each other. Third, each elementary idea corresponding to an external attribute must have the same degree of intensity or vividness that the attribute has in itself. If this hypothesis be accepted, you will see at once that an adequate individual concept is the basis of perfect judgments of form, size, etc., of the corresponding object. All analysis of an object depends upon the analysis of the individual concept. All comparison, or comparisons, of two or more objects depend for their results on the approximation to adequacy of the compared individual concepts. No comparisons take place outside of consciousness, and the result of the comparisons depends entirely upon that which is in consciousness at the time of comparison. The scientific value of all classifications which are the result of comparison depends upon the distinctness of the individual concepts. Upon individual concepts and approximation to adequacy depends all our knowledge of the external world.

All analyses and comparisons depend upon the individual concept.

Classification.

Adequate concepts purely ideal.

Taking for granted this attempted definition of an adequate individual concept the following inferences may be made: that simple mind energy, which I call an elementary idea, never can equal in

power or intensity the external attribute, for the reason that no brain has the physical basis of such adequacy; no individual concept can have for its content all the elementary ideas which correspond to the attributes of an object, for the simple reason that all the attributes of an object cannot, from the nature of the brain itself, act in and through it. It follows, therefore, that the arrangement of the individual concept must be vastly inferior to the arrangement of attributes in the object. In a word, an adequate individual concept is purely ideal; no such result was ever yet produced in the human brain or synthetized by the mind. I refer you to what I have already said in the talk on attention, that the attributes which act upon consciousness, upon the highest developed brain, are exceedingly vague compared with the attributes which compose the great All Energy of the universe. The development of the brain is along the line of its power to receive more and more of external attributes, to increase its power of correspondence, that each attribute may act with greater definiteness, and produce higher results in the way of clearer elementary ideas, and more nearly complete individual concepts.

Practical value of individual concepts.

I do not wish to exaggerate in any way the importance of the growth and development of individual concepts, but I believe that a little reflection upon modern history will confirm what I have said in regard to the value of distinct correspondences in consciousness to external objects. We are all somewhat vaguely aware that in the last fifty years there has been a complete revolution in discoveries and inventions. I say that we are vaguely aware of this fact, because it seems im-

possible for the human mind to comprehend the immense gains for humanity and human growth that have been made within a short lifetime. How can this tremendous advance be explained? All modern discovery, invention and progress in science consist wholly and entirely in the discovery of differentiated energies which act through matter, energies that have existed since the beginning, and which have been ever active and acting, awaiting a closer and more thorough observation.

Watt, with sharpened senses, watched the form of the rising, curling steam, until he discovered the energy which acted through the particles of vapor and utilized it. Newton considered heat a material substance, but closer observation proves it to be a mode of motion, a great animating energy. Not until the forms of sound vibrations were discovered was the nature of sound known, and the great application in the telephone and phonograph made. The same can be said concerning the discovery of the nature of light and color. When the waves of ether we call color, their shape and mode of motion, were discovered, then we learned for the first time what color really is. Keen observers of electricity fill the laboratories of to-day. When we know exactly what electricity is—and it is probably a mode of motion allied to sound, heat and color—we shall know better how to apply the same. The theory of evolution, worked out by Lamarck, and brought before the thinking world by Darwin, is the product of the closest observation. Keen-eyed geologists, within a few years, have changed most of the former generalizations in regard to the history of the earth's crust. The science of ethnology has also been

created within a very few years, and its creation has depended largely upon discoveries of the traces of man's life in ruins and in the earth, and the interpretation of those traces by thoughtful observation.

The psychology of to-day depends upon the closest observation of the physical basis of consciousness and the relation of brain and the whole sensorium to mind action. Individual concepts corresponding to objects and bodies of matter of which the universe consists are the products of searching investigations and the most indefatigable study; from such concepts have sprung the marvellous discoveries in modern progress. All study of the universe has for its sole aim the knowledge of those energies which act through qualities of matter. When we thoughtfully appreciate the all-important truth that the universe is the manifestation to man of Eternal Love and Power, we get some apprehension of the priceless value of observation and investigation.

External energies which act upon consciousness.

There are thinkers and educators in this world of ours from whose writings we seem to gather the inference that the creation of the senses is not altogether a success; that although the senses are of some use, still the sooner the mind gets into the region of abstraction, and away from the domination of the senses, the better, and that a few sense-products are amply sufficient for the evolution of the highest philosophy. When the educative value of observation is urged, these profound abstractionists cite, with a presumption of finality, the case of the savage who is surrounded by all the beauties and glories of nature. "Why," they say,

Sense-products undervalued.

The savage.

"is this child of nature not educated, when he has complete educational means at his command?"

Why the savage is not educated.

The same question might be asked, with equal justice, of the brute, who lives in the mountains and the woods. It seems to be an indisputable fact that the human organism, or the brute organism for that matter, determines absolutely the creative influence of externality; that the organism of the brain itself, with its convolutions and fibres and sub-organs, determines that which shall enter it and vivify it. It is said—I do not know with how much truth—that there are savages surrounded by infinite attributes of color upon whom but three colors act. It is said that there are Bushmen who cannot see a picture. If the painting of a very familiar landscape is presented, they will hold it upside down, and look at it indifferently, without its arousing any appropriate activities.

Motive.

Again, the motive determines all intellectual action and growth. It is stated that the savage has wonderful sight, wonderful hearing, wonderful

Acuteness and sharpness not education.

acuteness and sharpness in listening for the steps of the approaching foe or watching the trace of the flying game, and it is true; but the motive is entirely limited to self-preservation, either in self-defence or as a means of satisfying his hunger and limited personal wants. His acuteness and sharpness are narrowed down by his motive. It has the very

Motives compared.

lowest educative value. When his motive rises to the preservation of his family, his observation takes a wider sweep, and still broader when he is incited to work for his community or tribe. Compare these low motives in evolution with the high motive of the love of truth for truth's sake, or a deep, strong curiosity to know, or,

with the still higher motive, the belief that much can be found for the good of humanity. Finally, environment in every stage of evolution, from the lowest grade of savagery, or even brute life if you please, has had its particular effect in the evolution of man. From the hypothesis of evolution countless generations must live and die and project their evolution into other generations before the being rises to that which we call education. And to this may be added that that which is called education is the *designed* presentation of conditions for the evolution of the whole being. The savage or barbarian has had little or no such presentation, no scientific conditions for the evolution of thought. So it seems to me that this argument, so often brought up, regarding the savage, in order to show conclusively that observation is not the foundation of all human development, falls to the ground.

Hypothesis of evolution.

The other great means for education we find in symbols, the greatest number of which are in oral and written languages. These symbols are used for the expression of man's thought in contradiction to the fact that the universe is the expression of God's thought. But throughout the ages educators and authorities have clung tenaciously to the delusion that the greatest and most effective means of education consist in the study of books. Words have been their fetish, everlastingly adhered to; clung to as a pagan clings to his idols. The greatest problem of the past, in which the paramount idea was "control of the many by the few," was how to make man believe he was educated, and at the same time deprive him of the power of original thinking. The whole machinery of au-

Symbols.

Educative value of the study of books.

thority and the immense power of tradition were brought to bear upon the solution of this question, how to keep the masses from anything like true education. One solution of the problem was to separate the soul from the truth by means of the written page. "Study, learn, believe, and follow me!" is the echo of oppression in all the past; the same command is still written in ignorant souls, in human beings struggling in darkness all over the known world, and even, alas! in our own republic, in which we have lately decided that society can rule itself.

Books the means of perpetuating human authority.

The educative value of reading and observation compared.

A careful comparison of the relative educational values of reading, or the study of books, and of observation, is of the first importance to teachers. Many who will readily grant that the written page is an absolute necessity to human development, will at the same time positively deny that the printers' ink has ever or can ever reveal to man eternal truths so efficiently as by the direct manifestation of God through the universe. We will take for our hypothesis that all energy is a unit. We may not know this, but we believe it,—that all energy, all knowledge, and all love, are comprehended in God. I say all love, for I must here repeat the words of Browning:

> "The loving worm within its sod were diviner
> Than a loveless God amid his worlds."

Divine power of external energies.

We can also reasonably hold to the hypothesis that that All-Love and All-Power, that unit of divine energy, manifests itself to human minds through matter; that the energy becomes elementary, *is differentiated in and through matter for the direct purpose of revealing itself to man's soul;* that the leaf and flower, the mists and the clouds

that tell their stories of the far-off ocean, the pebble on the beach, and the coal that burns in the grate, are in themselves and their causes revelations that human souls are capable of understanding. There is no beam of light that strikes the eye and colors the mind but says to man: "Follow me, and find me." "Behold, I stand at the door and knock." The divine energy surrounds man, forms his environment, and acts upon his soul with unspeakable power. "He that hath ears to hear, let him hear."

Myth.

Myth-creating, common to all mankind from the time that light first kindled the fire of curiosity in human souls, has been and is the strong mark of the universal tendency of man to find God through His manifestations in nature. Shall we say that this tendency is wrong because imperfect observations, by struggling minds, have led to tentative and imperfect conclusions? Is it not better to believe that this all-controlling desire is divine in its nature, pointing man to that higher knowledge, the Creator's revelation of Himself, which will finally lead to the truth?

Myth the pathway to truth.

These two hypotheses have been the central cause of the conflict between man and man: man's duty is to know and obey the behests of human authority; man's soul was created for and endowed with the power to seek and find eternal truth for itself. I would not overrate the value of observation, or underrate books as means of education; I only state to you, my fellow-teachers, that which comes to me with overpowering force. "We have climbed up some other way;" we have said: "This is nature, this is science, and *that* is God."

Human and divine authority.

What is history with its countless tomes? History in spirit is the mirror of man's prejudices, the expression of his self-conceit, his subserviency, his serfdom, his worship of kings, forms of government, and creeds. Goethe has put this in a few expressive words:

Goethe.

"Was ihr den Geist der Zeiten heisst,
Das ist im Grund der Herren eigner Geist,
In dem die Zeiten sich bespiegeln.
Da ist's denn wahrlich oft ein Jammer!
Man läuft euch bei dem ersten Blick davon.
Ein Kerichtfass und eine Rumpelkammer,
Und höchstens eine Haupt- und Staatsaction,
Mit trefflichen pragmatischen Maximen,
Wie sie den Puppen wohl in Munde ziemen!"

"What you the Spirit of the Ages call
Is nothing but the spirit of you all,
Wherein the ages are reflected.
So, oftentimes, you miserably mar it!
At the first glance who sees it runs away.
An offal-barrel and a lumber garret,
Or, at the best, a Punch-and-Judy play,
With maxims most pragmatical and hitting,
As in the mouths of puppets are befitting!"*

The study of history.

It is true, following the lead of Niebuhr, that the study of history is fast becoming scientific: our greatest American writer of history, John Fiske, has helped us essentially in this direction. The best we can say of past history, preceding the scientific period, is that the human environment (the "Zeitgeist") controlled in a marked degree written history. History is in spirit and truth a written account of the evolution of man. The great question which modern scientists are seeking to solve is:

Scientific history.

* Translated by Bayard Taylor.

how, by the study of human records, can we find the truth in the mass of chaff and fiction? First of all, we must be able to estimate the spirit of the times, the controlling motive of the writer, and his surroundings and limitations. We can illustrate this by recent history. Take histories of our late Civil War—one written from the Confederate standpoint, and one written from the Union standpoint: the study of either history alone would inevitably lead to errors that must develop bigotry and extreme prejudice. How can we find the truth in history? How can the wheat be sifted from the chaff?

What is true history?

Personal experience is the fundamental means or basis of judgment of the experiences of the race in all ages. A child's observations and experiences in family, community, social, religious, and school life lay the foundations of his after judgments of human life, both present and past. If a strong, tyrannical government controls him in the family or in the school, he will either reverence or hate that form of government as he compares his own life with the lives he finds in history. "He who possesses the youth, possesses the future," may mean that a child's early life should be "cabined, cribbed, confined" by tradition, bigotry, and prejudice. If his experiences and observations open his soul to the love of truth and the love of mankind, if his school life breaks the awful barrier of hate, then he can read and interpret history in the divine light of love to all mankind. If history is dogmatically taught, the history of a church, or the history of one form of government, the students are led to believe implicitly the printed statements, and the result is the perpetua-

Personal experience the one basis of judgment.

"He who possesses the youth, possesses the future."

tion of narrow mental and moral limitations. Such study bars the path of liberty to freedom. The student must have the means, the mental power, to judge for himself, and *the bases of that judgment are the products of his own personal observation.*

Dogmatic teaching.

Dogmatic teaching is the perpetuation of dogma and creed in government and church. The teaching of history which presents the proper conditions and leaves to the student his own inferences and his own generalizations leads to the education of the true citizen and the development of the highest type of manhood.

Science.

What text-books shall be used in teaching science? The distinguished head of a Scottish University is quoted as having said that a text-book upon science more than ten years old cannot be profitably used by university students: this statement but echoes the opinion of all scientists.

Text-books upon science.

All text-books upon science, then, which do not present the latest inductions and generalizations are to be relegated to the history of the evolution of science. To a student of such history the works of the scientists of the past are of great value, because they present the protracted study and struggles of great thinkers who arrived at tentative and incorrect conclusions from insufficient data or inaccurate observations and experiments. The whole history of science is strewn with the

Wrecks of theories.

wrecks of theories. It is true that no scientist ever worked in vain, that even "our failures are a prophecy," but the principal truth acquired in the study of the science of the past goes to prove the weakness and incompleteness of inadequate observations. The most important lesson taught by this continual surrender of generalizations is that

the theories of to-day are simply tentative; that although progress in science has been marvellous in its outcome, still the human race is but upon the threshold of the discovery of new truths, which will no doubt put in abeyance many if not all of the modern conclusions. In a word, the great danger in teaching science, as in everything else, is to teach a perfect reliance upon human authority.

Danger of text-book science.

Some one has said that the greatest discovery of the Nineteenth Century is the "suspended judgment;" in other words, the true scientific attitude towards discovery and investigation. Whatever a working hypothesis may be, the genuine scientist is just as anxious to prove its falsity as its truth, and he bends all his energies to collect the data for either result. A very good working definition of education is, *the development of the attitude of the soul towards truth.* That attitude can be cultivated only by the self-activity of the mind with unprejudiced judgment intent on the direct discovery of truth. A too early study of text-books has a strong tendency to prejudice judgment and restrict the attitude of the mind in its original ingenuousness: "Except ye become as a little child."

The "suspended judgment."

Definition of education.

The human mind has, in general, two opposite poles. One is a tendency to inertia, from which arises a longing desire for a fixed and final belief in dogmas. The other pole is curiosity to discover truth, stimulated by an honest doubt of presented generalizations; "doubt is the beginning of wisdom." There is no better way to develop and cultivate this Heaven-born attitude of the soul towards truth than by bringing it directly in contact with truth along the shortest line of resistance—God's manifestation before man's represen-

Inertia and curiosity.

Observation a means of cultivating love for the truth.

tation. Observation is a fundamental means of cultivating a love for truth and an earnest desire to know it. On these grounds the two great antagonistic motives meet and have their conflict; one of which is that a human being should believe implicitly in human authority, and the other, that a soul shall doubt human authority and try to find truth for itself. In the former, books alone are the first and efficient means; in the latter, unprejudiced observation. One is the study of text-books made by man; the other, the study of the book of nature, the direct revelation of God to man. The cultivation of the love for science is the cultivation of the love for truth, for beauty, and for goodness.

Laboratories of science.

That laboratories for direct investigation, observation, and experiment are indispensable, is now recognized by all universities, some colleges, and a few high schools. The true leaven has begun to work in secondary education, aroused, it is true, by the great practical value of discoveries. But I wish

Plea for children's laboratories.

to enter here a special plea for the children, having already shown that they begin all these subjects of science spontaneously. I wish to earnestly protest against making school-children wander through a long desert and wilderness of words before a few of them, who intellectually survive, can have the inestimable privileges of direct observation found in the laboratories of universities. When pupils in the lower schools study science throughout the course there will be a hundred students in our universities where now there is one.

Ignorance of teachers the reason science is not taught to little children.

I can here safely give the reason why children are not taught science, and I think you will all agree with me: teachers do not really know science themselves, on account of text-book methods. So

we should hail with great joy the fact that the universities are now opening laboratories for the direct study of science. How can the day be hastened when the little ones, on entering school, shall be brought face to face with the truth manifested by the Creator through His works?

Here I present an argument often used and venerable—used not so much to-day as yesterday—an argument put in the form of a question, which seems to settle the matter in the minds of those who ask it: "Shall the child in his search for knowledge go through all the experiences of his race in finding it? Must the child discover for himself all the generalizations which he is to make his own?" This question would seem to imply that there is in the minds of some reformers in education an idea that past experiences are of little use to the child. Or, to put it the other way, it is sufficient for the child to learn what great discoverers have found, to memorize their facts generalizations, and thereby gain the required knowledge.

Should a child go through the experiences of the race?

What has the past brought to the child of the present? Certainly the child should not go through all the mistakes in observation of those scientists who offer him their incomplete products. "There is no royal road to learning" means, if it means anything, that self-activity is the fundamental law of human growth, that each human being must "work out his own salvation," that he must discover truth for himself. It means that there are immutable laws of human growth and development; that the brain, cell, fibre, and filament; that the conscious activities, that the laws of consciousness, synthesis; analysis, comparison, classification, and generalization, are precisely the same as

No royal road to learning.

Immutable laws.

they were in the beginning; that the powers of a human being may be enhanced by heredity, but the laws of the mind remain the same; that there is no human education possible except by self-educative effort, and that all the products of the past do not diminish in the least the necessity for the succession of self-efforts in the direction of higher development.

All education by self-educative effort.

What the past has brought the child.

The vast treasures which the past has brought may be divided into two principal factors of education: first, a better knowledge of the human being, of anthropology, ethnology, psychology, and all those sciences which embrace the knowledge of the origin, growth, and development of man; second, the discovery of the external conditions of human growth, the knowledge of nature and its laws, of man and his true history. The science of pedagogics is the science of the application of external conditions for human growth, physical, mental, and moral. The delusion that books in themselves necessarily induce human growth, that there is less self-effort, less struggle, less persistency, less will-power necessary, is one which does much harm. All the past has brought us, with its wealth of inventions and discoveries, may be summed up briefly: more effective means for better development, and for a more effective character-building.

The delusion of books.

Economy of energy.

All inventions and all progress consist in one thing—economy of energy applied to the economy of human action in the direction of development. The forces of the universe have been ever acting, never decreased nor diminished; from the beginning unchangeable laws have been discovered and applied for the use of man. If the economy of en-

ergy, then, is the summation of all discovery and of all progress, the highest product is found in the economy of human energy, or education. Education is the economizing of the energies of the human being. How shall the child judge of the past, of the history of man and his discoveries? By his own discoveries, by his own insight, by his own self-effort; without this, it matters little what has been brought down the long ages,—the child is helpless.

Education defined.

One of the saddest things in this world is that a student may earnestly and honestly study for long years, only to find himself lacking in power to know and to apply the truth. The conditions of education must conform to immutable laws, else there can be no true education. Knowledge of laws and conformity to them concentres all the knowledge of the past. "Be ye not conformed to the world, but be ye transformed in the newness of light."

Wasted energy.

The unconscious, synthetic, and associative acts induced by observation are in themselves precisely the same in kind as those acts of synthesis caused by a direct act of the *ego* through the will. We name the former acts observation, from their cause, external objects; we name the latter acts imagination, from their cause, the *ego;* but the acts themselves, so far as I can see, are precisely the same. In observation the *ego* controls the body and mind and holds it in an attitude for the most economical action of the object. The result is a synthesis or unification of elementary ideas into wholes, of which the *ego* is conscious, not of the process, but of the result. In acts of imagination the *ego,* without the immediate action of external energies, puts itself in a mental condition for the unification of ideas, consisting of

Conscious acts of observation and of imagination the same in kind.

parts or wholes of former individual concepts, of elementary ideas lying below the plane of consciousness, and of individual concepts which have formerly been in consciousness.

Imagination.

The part that imagination plays in education cannot be overestimated. By imagination the human being can go outside of the sense grasp, can picture that which lies beyond his own immediate environment. That world beyond, of everlasting change in nature and man, is a world that the imagination must reveal, else study is vain and profitless.

Relation of imagination to observation.

The relation of the products of observation to the products of imagination is exceedingly close. The mental acts in observation or unification of ideas, and the mental acts of imagination, are, as I have already said, the same in kind, and they will also be in the one individual the same in quality and the same in intensity. The products of observation are used in imagination. Whatever the products of observation are, so will be the products of imagination, if the imagination is properly exercised. If the products of the senses are vague, obscure, and incomplete, it is reasonable to suppose that the products of the imagination will have the same incompleteness. If the knowledge of the environment is weak and insufficient, the knowledge of that which is beyond the environment will have the same imperfections. All great scientists have been persistent, close observers, and their generalizations, universally applied, are the products of that observation. Their imperfect or wrong conclusions have been derived, as before stated, from insufficient observation.

Observing powers of great scientists.

There are eminent educators who seem to believe

that reading is the key to all knowledge; that if the child is taught to read, the portals of truth are opened to him. Granting at the outset the vast and indispensable value of the action of the printed page upon the mind, still it can be truthfully said that if there is but one key to knowledge, it is observation, rather than reading. Most reading by children, and for that matter by most persons not truly educated, falls far short of anything like educative effect. The inefficiency of much reading is found in the failure of the reader's power to imagine. Nearly all of the educative reading of the children in the eight grades of the primary and grammar schools consists fundamentally in the exercise of the imagination, that is, consists of descriptions of facts in history and science, that in order to be known must be truly imaged in the mind. Reading arouses conscious activities, and the whole question of reading is whether these activities shall be educative. Mere reading, like all desultory and promiscuous conscious action, may be anything and everything but educative. An educative act has for its fundamental condition intensity of conscious action.

Reading not the key to all knowledge.

Reading and imagination.

I have already shown that mere conscious activities in themselves are not educative, nor do they in themselves lead to strength of mind. They are indeed the bases of mental power, but unless they become intensified, unless they rise from obscurity to clearness and distinctness, there is practically no educative movement. Now the question very plainly is, What should be the effects of the printed page upon the child's mind? First of all, it should stimulate intense acts of imagination. There should be a richness and vividness of elementary

Vague conscious activities.

ideas ready to rise above the plane of consciousness when excited by words. There should be a great store of related concepts already formed in consciousness.

Getting the thought of the author not scientific.

The common saying that reading is getting the thought of an author is not scientifically correct. Strictly, no one can ever have any thought but his own. The mental value of reading, or intense reading (the study of text), depends entirely upon the ideas which lie below the plane of consciousness; upon the individual concepts that have formerly been in consciousness, and upon personal experiences, inferences, comparisons, and generalizations. Upon the richness, fulness, and quality of one's own mind depends the action of printed words. Sentences recall former concepts, unite new ones, and arouse the power to understand or to draw original inferences. The quality of all imaginative acts is determined by the quality of previous acts of observation. Thus we see that reading is not the key to knowledge; it is rather the corridor beyond the broad door swung open by observation.

Quality of acts of imagination.

Text-book geography.

Let us look for a moment upon that common scene, which would be a laughable caricature were it not so sad: Here are the children in the schoolroom with heads bent over a so-called "Primary Geography," learning definitions of mountains, capes and bays, of islands and plains. They learn the definitions, they recite the definitions, and then become satisfied with the delusion that they know something about geography. Let them lift up their weary heads and look out of the window, and there are the mountains themselves! There is the bay, its waters sparkling in the bright sunlight;

there are the plains!! Long experience has taught teachers that the child who learns the text of a Primary Geography rarely ever dreams that the objects about which he reads are ever before his eyes when in the open air. The teacher thinks how much better it is for him to learn the definition, made by some great educator (!)—in other words, some job book-maker,—than it is to see the reality in all its beauty and power. The German teachers learned long ago that the only way to teach Geography is by observation in field excursions. Yet with us the fetich of word-learning holds thousands of teachers soul-bound by its superstitions. They still believe that the words are of more educational value than the things themselves!

Field excursions.

Thousands and tens of thousands of pupils go through the high-school text-books on physics, botany, and zoölogy with little or no observation; if they are sometimes fortunate enough to observe objects used for illustration, the specimens are too often paraded as something out of the ordinary, held in the hands of the teacher, or placed upon the table, merely to prove the facts (?) stated in the text-book.

Text-books in natural science.

I am making an argument here for observation that is as old as human thought. Every great thinker and every educator, from Socrates down to Froebel, have urged the study of the great text-book of nature. The Master illustrated all His teachings by scenes from the hills of Judea. The fact that confronts us in this discussion is that, although these truths have been urged for ages persistently, although they are generally believed by thoughtful men, still the real educative, life-giving work of observation has reached in our

The text-book of nature.

Republic very few children, and the reason for this sad state of things is that very few teachers have had an opportunity to actually study science.

Opportunities to study nature.

Outside of the school windows, in many a beautiful country-place, the birds sing in the trees, the clouds float overhead, the trees, hills, plains, valleys, all cry out to the child; all nature yearns to speak through his senses to his soul; waits with awakening power to open the sealed fountain of his being, to stir in him the germs of feeling that link his soul to the great over-brooding Soul of the Universe.

> "Wisdom and Spirit of the universe!
> Thou Soul that art the Eternity of thought,
> That giv'st to forms and images a breath
> And everlasting motion, not in vain
> By day or starlight thus, from my first dawn
> Of childhood, didst thou intertwine for me
> The passions that build up our human soul;
> Not with the mean and vulgar works of man,
> But with high objects, with enduring things—
> With life and nature—purifying thus
> The elements of feeling and of thought,
> And sanctifying, by such discipline,
> Both pain and fear, until we recognize
> A grandeur in the beatings of the heart."

But the children, the poor children, are confined to dead words, as if there were some mysterious power in them to awaken intellectual and moral life. "Behold, the fields are white, and ready for the harvest." "Come and learn of me," "Know me," "Love me;" but he who is buried in the dead formalism of the past has not ears to hear nor heart to understand the longing cry. All-sided observation of nature has for its grandest result a profound love and reverence for God's

glorious manifestation of Himself in the universe. No one can study nature without loving her; no one is ever alone, is ever where there is nothing to love and to be loved by, who listens to the voice of the Eternal One sounding and singing through all that He has created and is creating.

Loving nature.

One of the most encouraging movements of modern times, in education, is the bringing of good, sweet, pure literature into the life of the child, replacing dry text-books with beautiful thoughts. But upon what mental conditions does the power to understand, appreciate, and love good literature depend? The first quality of literature is genuineness; genuineness is an unalloyed revelation of the soul. The fact of genuineness is the fundamental fact of literature, and next to and higher than this is the manifestation of the soul in its evident struggle to know and to express the truth. Good prose and the masterpieces of poetry are generally filled with lessons and illustrations drawn from the closest observations of the invisible through the visible world; indeed, take the descriptions, the teachings of nature, out of poetry, and nothing but a bare skeleton would be left.

Literature for children.

Genuineness.

Whence have come the grandest inspirations of thinkers and writers in all ages? The greatest preacher of our age was a devoted student of nature; the poets whose works live are filled with the closest observations of nature, and generalizations therefrom. Nature speaks with no uncertain voice to him who penetrates her deeper mysteries.

Inspiration of all great authors.

"Flower in the crannied wall,
I pluck you out of the crannies;—
Hold you here, root and all, in my hand,

Little flower;—but if I could understand
What you are, root and all, and all in all,
I should know what God and man is."

Is it true that a study of nature leads up to a knowledge of God? Consider Job, who was established in his faith, in spite of all his wretchedness and woe, by the contemplation of God in nature. Any one who can read with understanding these words of Lowell must have a deep well-spring of moral power within him:

" Whether we look, or whether we listen,
We hear life murmur, or see it glisten;
Every clod feels a stir of might,
An instinct within it that reaches and towers,
And groping blindly above it for light,
Climbs to a soul in grass and flowers."

Or these sublime words of Thomson:

". . . The rolling year
Is full of Thee. Forth in the pleasing spring
Thy beauty walks, Thy tenderness and love.
Wide flush the fields; the softening air is balm;
Echo the mountains round; the forest smiles;
And every sense and every heart is joy.
Then comes Thy glory in the summer months,
With light and heat refulgent. Then Thy sun
Shoots full perfection through the swelling year;
And oft Thy voice in dreadful thunder speaks,
And oft at dawn, deep noon, or falling eve,
By brooks and groves in hollow-whispering gales.
Thy bounty shines in autumn unconfined,
And spreads a common feast for all that lives.
In winter awful Thou! with clouds and storms
Around Thee thrown, tempest o'er tempest rolled,
Majestic darkness! on the whirlwind's wing
Riding sublime, Thou bid'st the world adore,
And humblest nature with Thy northern blast.
Mysterious round! what skill, what force divine,
Deep felt, in these appear! a simple train,

Yet so delightful mixed, with such kind art,
Such beauty and beneficence combined;
Shade, unperceived, so softening into shade;
And all so forming an harmonious whole,
That, as they still succeed, they ravish still.
But wandering oft, with brute unconscious gaze,
Man marks not Thee, marks not the mighty hand,
That, ever busy, wheels the silent spheres;
Works in the secret deep; shoots, steaming, thence
The fair profusion that o'erspreads the spring;
Flings from the sun direct the flaming day;
Feeds every creature; hurls the tempest forth;
And, as on earth this grateful change revolves,
With transport touches all the springs of life."

Relation of the products of observation to all study and thinking.

Just in proportion as man is a true student of nature can he understand lines like these. The real study of science interprets the study of literature, and makes it possible to enjoy and understand the depths of the many beautiful things in which poets have expressed the sublimest truth. I grant that there may be a cold, hard, materialistic study of science, but the true study of science has for its outcome the power to understand the best that there is in literature.

Ethical use of science.

The ethical use of science should not be overlooked. Summed up as a whole, most of the discoveries in science have for their highest use the improvement of conditions for human comfort, happiness, and consequent development. No one can study science without acquiring the means of enhancing the value of home and the happiness of the community in which he lives. Let me appeal to you is this not true: the things we almost wholly neglect in our teaching are the earth we live on, the air we breathe, the water we drink, and the life and powers that impinge upon us

from every side, the things of health and wealth, of true success and real education? History tells us what man has been; science, what he should be. My earnest plea, then, to you, my fellow-teachers, is, that our children, the future citizens of our country, shall have the privilege and the means of studying science throughout their whole school course.

Elementary science should be taught throughout the whole school course.

Opportunities for studying science.

And here it may be well to refer to the countless opportunities there are for the study of elementary science in primary and grammar schools. I taught school for nearly thirty years without having even the vaguest ideas of the abundance of opportunities there is for children to study their environment of earth and air and water, of life and motion; and now it seems that the means near at hand for human growth are infinite in number and infinite in possibilities. What is there in Geography? That environment, especially in the country, must be very poor indeed that does not furnish a type or specimen of every form upon the earth's surface. Hills and valleys, mountains and plains, brooks and rivers, one or all of these natural forms, are within easy reach of almost every schoolhouse. Now the study of Geography is impossible without the direct observation of surface forms. There can be no foundation laid for the surface forms which must thereafter be imagined, without careful observation. The first four or five years of a child's school life may be spent very profitably in observations of surface. What I have said of Geography is just as true of Geology and Mineralogy. The modeling of the earth's surface is going on all the time; there is scarcely a school-yard, except in cities, where these observa-

Geography.

Geology.

tions cannot be carried on every day. In meteorology, everywhere there are clouds and winds, and light and heat; even if the sun must be observed through the dense city smoke, it can be, and its movements noted, the changing slant of its rays from day to day. There are ice and snow, and all the forms of water, immediately open to observation. In botany, all vegetation offers itself to the teacher. Pots of flowers may be put in the windows, if nothing else. Excursions to the woods and plains may be taken. Animal life may also be studied everywhere,—from the domestic cat to the horses that draw heavy loads through the streets. But when we come to Ethnology and History, the means of observation and experience are most abundant. School life furnishes countless opportunities for the most instructive experiences. If the school is a model school, a pure democracy, if the children are trained to govern themselves, then observations of the best form of government, its failures and successes, are ever before the pupils. The observations and judgments of the children are to be enhanced by the presence and direction of the teacher.

Meteorology.

Zoology.

History.

I know very well what answer could be made by teachers to these demands for the continual study of elementary science, and to the assertion that bountiful means are at command for such study. The present difficulty is in the way of public opinion, the demand in education being for something mysterious,—something supposed to be found within the lids of the text-book. I presume this will be a common experience with all teachers who have tried to develop the observing powers of children. In a country school, surrounded with

That which is of most use is least taught.

the bounties of nature in the way of lands, woods, vegetation, and animal life, if the teacher should actually take the children out into the fields during school sessions, and should study upon the farm that which is of the most importance for the farmer to know, should undertake to study something about the soils, fertilization, something of the insects injurious to fruits and trees, something of meteorology, or of drainage,—the result would be that the parents of the children would rise in indignation and try to crush such "new-fangled notions." This fact has been true from the beginning, that that which is really best and sweetest and most useful to the people is that which they have everlastingly opposed and denied as true and right.

New-fangled notions.

But we must go farther, and ask why the people reject that which is the best. The answer is not far to seek. They themselves are the products of text-book learning, and their judgments are entirely governed by the prejudices induced by the restrictions of their own education. They cannot see that the child can be bound to the home farm through love for nature; that love for agriculture will come by closer observation; they cannot see that the children glide away to the towns and cities and become clerks behind the counters upon this sliding platform built of text-books.

Education can be made so much better, so much richer in means and influence and breadth, by making observation the foundation. I have tried to present some arguments in favor of the study of elementary science, and, in conclusion, allow me to turn to an authority which many will accept and few deny,—to the argument of all arguments:

"The law of the Lord is perfect, converting the soul:
The testimony of the Lord is sure, making wise the simple.
The statutes of the Lord are right, rejoicing the heart:
The commandment of the Lord is pure, enlightening the eyes.
The fear of the Lord is clean, enduring for ever:
The judgments of the Lord are true and righteous altogether.
More to be desired are they than gold, yea, than much fine gold:
Sweeter also than honey and the honeycomb.
Moreover, by them is thy servant warned:
And in keeping of them there is great reward.
Who can understand his errors?
Cleanse Thou me from secret faults.
Keep back Thy servant also from *presumptuous sins;*
Let them not have *dominion* over me:
Then shall I be upright,
And I shall be innocent from the *great transgression.*"

One study.

There is only one study, and that study is the law; the conversion of the soul is through the knowledge of the law gained by the personal experience and insight which comes from self-activity. The ideal is that there is a perfect law, that the study of that law "rejoiceth the heart," that the law, when found by the soul's search, is "sweeter than honey and the honeycomb." The Psalmist is alive and aware of the dangers that beset a soul that is not in touch with truth: "Who can understand his errors? Keep back Thy servant from presumptuous sins." The isolated study of text-books has for its main product the presumption, "not of brains," but of knowledge—a self-satisfaction which is a bar to all future development. True humility, that poverty of spirit which has for its gain the "Kingdom of Heaven," can only come

Humility.

to the one who gains some apprehension of the boundlessness of knowledge and of the depths of truth by actual personal experience. The highest product of observation, and that which no other study and no other work will bring, is some idea of the infinity of knowledge and the finiteness of man; out of these conclusions alone comes the knowledge of the true attitude and righteous progress of man toward the truth and toward God.

"For He made us in His own image."

VIII.

LANGUAGE AND HEARING-LANGUAGE.

In the history of education the discussions of the principles and methods of teaching language, especially methods, occupy by far the largest place: this is true of language from the days when the Humanists held universal sway up to the present time. The relations of language to the evolution of the human race are of the closest nature: so close, that some psychologists, notably Max Müller, strive to prove that there can be no thought without language. Whether this be true or not, there can be no question that language is by far the most prominent factor in education. **Relation of thought to language.**

The relation of language to the people who speak it and whose ancestors created it is similar to the relation of the mind to the body, and, inversely, the body to the mind. It is a well-recognized fact that the attitude and bearing of the body and its gestures are marked indications of the mind's character and influence. Thought controls, modifies, and develops or degrades physical organs and physical power. **Relation of the body to the mind.**

Emotions of different kinds set in action involuntarily the whole body: joy is easily recognized by the attitude, bearing, and inflections of the body, the particular state of the mind out of which it arises, modifying the action of the whole organism. Fear has its strong influence, checking **Effect of emotions.**

nerve currents and contracting muscles. Each emotion, either of pain or pleasure, influences in a marked degree nerve and muscular action. A person in a state of constant merriment has a characteristic bearing; one controlled by continual despair has a characteristic bearing; one animated by hate of mankind carries the indications of this hatred in every muscle. It is past all question that every emotion has its corresponding effect upon the body, influencing the growth and development of physical power.

Influence of the body upon the mind.

The sensorium, muscular system, and sympathetic nerves all contribute to the most effective act of attention, enhancing the thought. Acts of educative attention are in essence a means of physical training which insures the higher development of the body as an instrument of attention.

In expression, the use of the body is more pronounced than in attention. The agents of expression are continually modified by the various muscular adjustments necessary to expressive acts.

In pure reflection, the body is not immediately used as an instrument of reception, but still indicates mental states. Its bearings or attitudes are best adapted to the mental effort necessary to reflection, in which state all receptive and executive action of the organism is suspended until the particular line of action has been determined. In other words, there is no absolute inertia of the body in any mental acts.

The mind creates the body.

The mind to a marked extent creates the body; every fibre of the brain, every nerve tract, every bundle of muscles,—indeed, all the organs of the body, strongly indicate the influence of the mind upon the body. This is true of each individual;

but each individual is only one of a series of individuals coming into the world with a body that is to a great extent the product of ancestral development. The mind is continually creating the body.

The relation of language to a people.

The relation of a language to a people who created it has much the same relation as has the body to the mind. A language is a body created, not by one individual, but contributed to by all of the individual units of a people and their progenitors from the beginning. The creation or development of language is an absolute necessity to thought development, following the law of all forms of expression. The general thought of a people, whatever the degree of civilization to which it has arrived, is indicated by the language of that people. A dialect is generally recognized as a case of arrested development. It is not an idiosyncrasy or eccentricity: it is simply an indication that a people who use the dialect has not kept pace in its development with the higher civilization of the race who use a common language.

Dialect defined.

The origin of language.

It is impossible to trace any language back to its origin; but the beginnings of language, it is not impossible to suppose, sprang from the crude necessities of a race just emerging into something like intelligence. Every word, no doubt, sprang from the immediate necessity of thought. Every idiom marked a peculiar phase of thought. Every modification of subject or predicate indicated a step in human progress. As in the past, so in the present, new inventions, discoveries, explorations, not to consider newly awakened perceptions of being and feeling, make demands for new words or old words with new meanings. In languages like the German, the original language of the peo-

ple serves them in using old words with changed and higher meanings; while in English the source of new words is found in the Greek, Latin, and other languages.

Language indicates civilization.

It is not my purpose to give a general indication of how language is developed, but to show the close relation of the growth of a language to the growth of a people. A language in itself indicates better than any other means the exact stage of the growth and civilization of the people who speak it. A geologist reads in a characteristic area of the earth's surface the geological history of that surface. This fact has a far deeper significance when applied to language. Although philology is a comparatively new science, yet as a means of studying the spiritual life and growth of a people it is incomparable. Ruins and implements give fleeting, disconnected insight into a people's history; but the language of a people, the tracing of even one word back to something like a supposed origin, is a vista in the life of that people.

Philology.

Language indicates environment.

The language also indicates the environment of a people. When it was found that in Sanscrit there were no names for animals of Asia that live in the Oxus basin, it was taken as a proof that the Aryan race did not have its origin there. A language is the ethnographic body of a people, reflecting the life and thought of that people, from the beginning. Just as the nerve tracts and muscular co-ordinations of the body indicate the growth of the mind of an individual, so do the words, idioms, and syntax of a language indicate the development and growth of the assembled mind of a race.

The one insuperable argument in favor of the

educative value of dead languages is, that in no other way can the spirit, the genius, and the inner history of a people be so thoroughly understood as in a language. The Greek language, for instance, is the body that remains to us of a departed soul, showing what that soul was on this earth—how it struggled and grew, what its imaginations, its religions, its aspirations, and its victories were. Greek history can be best understood through its language. The study of a language, dead or living, is a study of the human spirit. This fact gives us the method and motive for the study. The study of dead forms, whether in our own vernacular or in a language of the past, is of the lowest educative value; but the study of a dead language that has for its sole aim the revival of pictures long gone by, an understanding of the inner life of the people once using it, what they thought, how they struggled, how they conquered or failed, gives the student an impulse in the right direction, and determines the method by which all languages should be learned—the method which arouses the deepest interest and attains the most valuable results.

Value of the study of dead languages.

Greek.

The literature of any language contains in itself the history of the highest life of the people. The loftiest aspirations of the Italians we get from Dante, of the Romans from Virgil and Horace, of the Greeks from Homer and Xenophon. Because the methods of the Humanists consist, in general, of empty formalism, because much of the study of modern language, and even our own, is of the same nature, the direct inheritance of our pedagogical ancestors, because language has been taught with the least educative effect,—present no valid

Relation of literature to history.

reasons why the study of dead or living languages should be discarded. A knowledge of each and every language which has poured its flood of words into English speech reveals to the learner the otherwise hidden might of his own vernacular, and enhances greatly his power of thought and expression. "A modern language is the mirror in which one sees his own language." Are not the unscientific and therefore extravagant methods of teaching languages the reason why so many students, after years of drill in dead forms, know so little of what they have tried to study?

How a child learns language.

It may be well for us to glance for a moment at the method by which a child learns the spoken language. The subject should be of deep interest to teachers, especially under the teachings of Preyer, Perez, Darwin, Taine, Romanes, and other scientists who have assisted so materially in this direction. In the first place, a child makes his own language—a language of gesture, a language of babblings, which has its vague but significant meaning to the child. Then comes the language that he hears spoken around him. What are the difficulties that a child has to overcome in learning this language? Because every child learns the language with such ease, we are apt to think that the difficulties are slight.

Hearing-language and speech, two things.

I am now discussing how a child learns to hear, or to understand, oral language. It is true that hearing and speaking have exceedingly close relations to each other, but they are two things entirely different in themselves and in acquisition; hearing is learned by a series of acts of attention; speaking, by practice in uttering thought. In any-

thing like scientific investigation the two must be kept separate.

Let us consider the tremendous obstacles a child must overcome in learning to hear language. These difficulties may best be described by a partial analysis of speech. Pronunciation is the main factor in oral language. It may be generally defined as making oral words by means of the vocal organs. The pronunciation of a word consists of, first, the enunciation of each sound element; second, the articulation or uniting of the sounds enunciated. In articulation there is an imperceptible pause between two successively uttered sounds, and a perceptible pause between syllables; third, in words of more than one syllable inflection of voice or accent upon one of the syllables; fourth, a slight inflection less than accent, which is called rhythm, in the utterance of every syllable. In the analysis of pronunciation we have enunciation, articulation, pauses—perceptible and imperceptible,—accent, and rhythm.

Obstacles which a child overcomes in learning to hear language.

Pronunciation, enunciation, articulation.

The second great obstacle to be overcome in hearing-language is the mastery of idioms. The idioms, i.e., the general arrangement of the words in sentences, differ greatly in form in different languages; indeed, the principal obstacle to be overcome in learning a foreign language is the idiom, and it is reasonable to suppose that this same difficulty confronts the child. A sentence consists of words related in conventional order, or syntax. The function of each word is to arouse certain definite activities; the sentence arouses these activities in a certain definite relation. The idiom being an arbitrary and conventional relation of words to each other, must be acquired by the asso-

Mastery of idioms.

Function of a word.

ciation of the thought with the conscious effect of the idiom.

Voice. The foundation of the spoken language is voice, or vocalized breath, modified by the organs of speech. The shape of the vocal cavity or the exact position of the organs is an indispensable condition for the making of definite voice elements. These definite qualities or voice elements depend upon the shape of the organs anterior to the vocal chords. In the utterance, then, of a sentence we have articulation; the pronunciation; the relation of words to each other, or the syntax of the sentence; the rhythm of each syllable, which we call melody; and the combined rhythm of all the syllables, or harmony; back of this, emphasis, the spontaneous impulse of the voice in inflection, is the direct reflex of the highest impulse of the thought itself; force of voice which denotes the intensity of the being; and quality, which shows the kind of emotion or degree of earnestness which moves the speaker. Vocalized breath or voice, rhythm, melody, harmony, and emphasis are not obstructions in learning to hear language; they are helps spontaneously generated and understood.

Articulate sounds.

Pronunciation analyzed.

Functioning words. The difficulties to overcome in learning to hear language consists principally of pronunciation and idiom. Learning to hear language consists of functioning words and idioms. A word is functioned when it acts upon consciousness and arouses instantly certain definite activities—activities which the word was made to arouse. The activities which a word when functioned arouses in consciousness we shall call *appropriate activities*. The general law of association may be stated as follows: When two activities, either simple or complex,

Law by which words are learned.

immediately succeed each other in consciousness, the after appearance of one of these activities *has a tendency to recall* the other. The particular law relating to functioning of words is: When the mental correspondence of the word is immediately succeeded by its appropriate activities, or *vice versa,* the reappearance of the correspondence to the word *has a tendency* to recall its appropriate activities, or *vice versa.*

Appropriate activities.

An oral word, through the ear, arouses its correspondence in consciousness, and this correspondence in turn arouses certain activities, which I call appropriate activities, in contradistinction to corresponding activities. A word that merely arouses its correspondence without any further effect in consciousness is not functioned. The law for the functioning of every word may be stated under the general law of association. Two activities must immediately succeed each other: the first activity is the effect of the word, or its correspondence; the second activity is the appropriate activity. When these two activities immediately succeed each other in consciousness, the appearance of one thereafter has a tendency to recall the other. There is no other law by which a word can be learned. Words are learned by acts of association,—the association of the effect of the word itself with the appropriate activities, or the activities which it was made to recall. A word is learned by repetition of these acts of association. The less the intensity of the act, the greater the number of repetitions, and, conversely, the more intense the acts of association, the fewer the number of repetitions necessary.

Law restated.

Relation of intensity to repetition.

The intensity of these acts of association with

Interest.

children, we will grant, depends entirely upon interest. That interest is aroused by a desire to understand what other people are saying. There is no interest in the effect of the word itself; the interest is entirely dependent upon the emotions aroused by the appropriate activities which the correspondence to the word recalls. We have briefly stated the difficulties which children must surmount in learning to hear language, and also the action of the law by which the difficulties must be overcome. Each word is made by itself, each sound in an oral word is made by itself, and must really be heard by itself; still the process of mentally synthetizing these sounds is perfectly automatic. The child is vaguely conscious of the effect of the word as a whole, and although the sounds are continually uttered in his presence, he never makes an attempt unprompted to analyze an oral word into its component parts. A word acts instantaneously like any other object, and acts as a whole.

The child conscious of the whole word, only.

Illustrations.

To illustrate this point: an object is presented to the child,—a doll, or a dog. An immediate interest, or emotion of pleasure, is aroused in consciousness by the presence of the object; the child has activities appropriate to the word at the same time the word "doll," or "dog," is spoken. The conditions of the act of association are perfect, and the associative act takes place in consciousness. The greater the interest of the child, the more intense, and therefore the more effective, the act. The child must first have the appropriate activities in his mind to be brought into consciousness, and the effect of the word must be there in immediate succession. Thereafter, if the act of association

is an effective one, when the word "doll" or "dog" is spoken the appropriate activities come into consciousness.

Idioms are learned in much the same way. The difference is that the effect of the idiom is to unite conscious activities in immediate succession; as, "A dog runs,"—which idiom unites the idea of dog with the motion of the dog. **How idioms are learned.**

The child begins to hear language long before he begins to speak. He begins instinctively and spontaneously to follow the law. Parents have intuitively a method of teaching children to hear language. They make no attempt whatever to divide the oral word into its component sounds. They understand perfectly that if the child is attentive and deeply interested in an object it will have no difficulty in learning its name.

Under this law and under these general relations the great work of acquiring vocabulary and idioms begins with the child. First a few words are learned,—the names of objects in which he is immediately interested: "mamma," "papa," "cat," "dog," and so on. Then follow the words united into idioms, the learning of each word and each idiom springing directly from the necessities of thought, a child rarely ever remembering a word which has failed to arouse certain definite conscious activities. The attention of the child is controlled by the words which recall thought, or by the desire to know the name of an object. **Relation of words to thought.**

We look upon the common fact of a child's learning the language in two or three years as something very natural, always to be expected, and having in itself nothing of the marvellous; yet when we study the matter closely and compare **What a child acquires in three years.**

it with some of the methods used later in school, it is indeed a wonderful process of mental action. A child acquires in three years the foundation of his own vernacular: the pronunciation and fundamental idioms of the language are in this comparatively short time within his power. There do not seem to be any great obstructions in the way; every step is met and overcome with great ease.

How parents teach children to hear language.

Parents never attempt to teach words which are not needed for immediate use; that is, words that are not directly associated with appropriate activities. The language which a child acquires is adapted to the immediate necessities of thought; thus a certain body of language becomes his own, to be used in hearing and expression. The language conforms to the thought; thought and speech become a unit in hearing and in speaking.

Adaptation of language to thought.

The simplicity or complexity of the sentences a child learns to use depends upon the simplicity or complexity of his thought. When this wonderful process is explained to teachers, and it is presented to them as an example of what spontaneity will do for the child, the answer often comes, "This is natural," "The child learns that naturally."

Use of the word "natural."

This word "natural," like charity, covers a multitude of sins—a multitude of sins of ignorance. It may be well for us to look at the word in its true significance, or in its scientific application. There is a vast difference between that which becomes natural through habit, and that which is according to nature. The word *natural* can have no scientific meaning other than conformity to the laws of the being. Teaching is the presentation of conditions for the normal or lawful action of the mind. That teaching is most

natural which is best adapted to the laws of mental action. If, then, the child learns to hear the oral language naturally, by conforming to the laws of its own being, why should he not continue the process by the same method? Why should he not learn the written language and all other languages by conforming to an immutable law of the human mind?

Imitation.

The forms, correct and incorrect, of language are acquired almost entirely by imitation. Whatever of speech a child hears at home, in the street, and in society he imitates; he forms strong habits of language, good or bad, which it is well nigh impossible later in life, even under the best teaching, to wholly eradicate. All this imitation of language, it must be remembered, is acquired and controlled by a desire to understand and express thought; there is little or no copying of meaningless words; the child has a motive in his acts, and adheres tenaciously to that motive.

How should language teaching be continued when a child enters school?

The child when he enters school has learned more of language than he ever afterwards can learn. How shall his knowledge of, and power over, language be enhanced? By the same natural method he has pursued so assiduously and successfully for six years? Or shall a new method be introduced which has for its basis the hypothesis that forms of speech must be learned for form's sake, unrelated and not impelled by the immediate necessities of thought? Shall an unnatural method be begun when he enters the portals of the schoolhouse? Shall his language, his sentences and their modifications, grow with the growth of thought, conform to thought, be adapted to thought, arouse thought? Or shall words be

Language should conform to thought.

learned by themselves and for themselves, with a vague belief on the part of his teacher that at some future time he may have the thought necessary for their use? Is it possible to enhance this magnificent spontaneous product by continuing the same method in teaching; that is, adapting language to the conditions of mental growth? Is it possible to make thought development the centre and adapt the teaching of language to every step in thought?

Grammar.

The child has been unconsciously learning the forms of language, including etymology and syntax, from the beginning; that he should continue the study of grammar is beyond doubt. A very serious question is: How should he continue this most important branch of knowledge? Is grammar also to be taught as a special subject, isolated from all other subjects? Must the knowledge of language outgrow the necessities of thought with the supposition that it will some day be needed when perchance thought is evolved? Or, on the other hand, can grammar be made the warp and woof of language which springs directly from thought, under the strong impulses to hear and to express thought? Shall it be spun and woven by itself without regard to inner necessities or without direct adaptation to the activities of consciousness?

How shall Grammar be taught?

Uses of language.

There are two fundamental uses of language and the grammar of language. The first is to enhance, to deepen and to broaden the understanding of speech and printed language; the second is to make language, both spoken and written, an adequate means for the expression of thought: both motives are a unit in the action and reaction of language, in the intensification of conscious activi-

ties. Hearing, reading, speaking, and writing are the formal modes of learning language; the question is, then, can the power to use language, and at the same time correct habits of language, be acquired by a continuous and complete union with intrinsic thought?

No necessity for purely formal study.

The purely formal studies of the past have been in a great degree a stern and awful necessity; there was little else to teach besides spelling, copy-writing, parsing, analysis, and construction. It is only within a few years, comparatively, that abundant means of thought evolution have been brought to the doors of the schoolroom; new-born sciences, a real geography, and a reformed history,—all are ours to use as the highest conditions of human development. The necessity for the extravagant waste of time and energy is gone forever. These magnificent subjects, full of sweetness and light, rich with divine thought and power, have come to the doors of the schoolroom. Shall they enter?

New conditions of education.

IX.

READING AND ITS RELATIONS TO THE CENTRAL SUBJECTS.

Reading as a mode of attention.

READING is a mental process. It consists of a sequence of mental activities immediately caused or induced by the action of written or printed words arranged in sentences. I propose to discuss the psychology and pedagogics of reading as a mode of attention. Oral reading is a mode of expression, and comes under the head of speech. Many of the grossest errors in teaching reading spring from confounding the two processes of attention and expression. Reading in itself is not expression any more than observation or hearing-language is expression. The custom of making oral reading the principal and almost the only means of teaching reading has led to the many errors prevalent to-day.

Reading not to be confounded with oral reading.

Observation is thinking; hearing-language is thinking; reading is thinking; and in anything like a reasonable discussion of the psychological nature of reading the subject of oral reading must be referred to its proper place as a mode of expression.

Value of reading.

Reading in itself has no educative value; it does not give rise to a succession of educative acts any more than does seeing, hearing, or touching. The value of reading in education depends entirely upon the educative subject presented, and upon

the intensity of the conscious acts. Ordinary reading, then, is not educative. It may consist of a succession of conscious states without any appreciable degree of intensity; it may consist of intense immoral states degrading to the mind: in a word, reading in itself is not moral, neither does it necessarily induce educative action. Reading may lead to the pollution of the soul; or, under the right conditions, it may be made the means of its highest development and elevation. The educative value of reading, then, depends (1) upon what is read; (2) upon how it is read.

Reading in itself not moral.

The educative value.

With these very important modifications in view it is readily seen that reading in itself may be made, next to observation, the greatest factor in education. Reading opens all the historical records of the past, all the discussions and discoveries that have been made throughout the ages. By reading, poetry and literature may become essential means of human growth. Here I wish to repeat what I have already said in discussing attention: a reader does not think the thought of an author, he simply thinks his *own* thought. By the action of words upon the mind ideas arise above the plane of consciousness; individual concepts and judgments that have formerly been in consciousness reappear, and are recombined and associated; new units are formed and fresh judgments suggested; but the mental results of written or printed words upon the mind are predetermined by the mind itself. If it were true that reading is "getting the thought of an author," then we should have to suppose that the reader has the power to think as the author thinks, the same power of imagination, the same power of inference, of gener-

Reading the greatest factor in education.

Reading not getting the author's thought.

alization; in fact the power to follow the same processes of reasoning.

Reading defined.

Reading is thinking, and thinking depends utterly upon the individual power of the mind. The difference between reading, and studying books consists entirely in the fact that the latter action is more intense than the former. In ordinary reading, waves or states of consciousness succeed each other with more or less rapidity; but in the study of text, states of consciousness are held under the action of the will. In reading, a sentence arouses a thought which is immediately succeeded by another, and another, and so on; in study, the thought aroused by the sentence is delayed or hemmed in, more distinctly presented to the *ego*, and therefore intensified by the action of the will. The result of this hemming in and intensification is a more vivid imagination, and consequently more valuable inferences. Ordinary reading is the essential preparation for study, as the exercise of the senses is for observation.

Relation of reading to study.

The psychology of reading, and at the same time of study, plays such an immense part in education, that its comprehension is a prime necessity.

Function of reading.

A written or printed word has one function and one only, and that function is to arouse or recall into consciousness certain definite and related activities—activities which the word was made to recall; in other words, those activities which, by convention, are assigned to the action of the word itself. A word is an object: it has length, breadth, thickness, and weight; it is made up of parts; it acts upon consciousness by the same law and in precisely the same general manner that any other object acts; it acts instantaneously

A word is an object.

through the nerve tracts of sight; it is the cause of an effect in consciousness, which effect, as with other objects, corresponds to the object that caused it. Any and all printed words act in the same way, producing an effect or mental correspondence.

Correspondence of a word.

This mental correspondence of a word has no value in itself; it is merely and solely a means to an end. When the word is functioned, its effect in consciousness, or its correspondence in consciousness, recalls certain definite activities. These activities may be called appropriate activities. The term *appropriate activities* has but one relation, namely, to the word which was made to recall the activities. The correspondence to any object, for instance to a word, is the immediate effect of the word in consciousness. The appropriate activities are recalled by the correspondence of the word to itself.

The word and the sentence.

I have said that each word, by means of its correspondence in consciousness, recalls certain definite activities. Certain words, nouns for instance, either common or proper, arouse definite activities which are not of necessity immediately related to other activities. Other classes of words, such as conjunctions, prepositions, adjectives, adverbs, and verbs, have for their function the arousing of certain definite activities in immediate relation to other activities; that is, their effects have only a suggestive relation to other activities. Thus we have the sentence consisting of subject and predicate and modifiers of the subject and predicate. The sentence arouses certain definite activities in relation each to the other. We say that a sentence arouses complete thought in consciousness; but

this statement is hardly sufficient, as many a sentence does not arouse complete thought, but is immediately related to the thought which precedes or to that which follows it.

Study of psychology.

If you wish to study psychology there is scarcely a better way than to have some one write words upon the blackboard and try to account for the presence of activities in consciousness caused by the words thus written. The arrangement of words in sentences or syntax of language, is an arbitrary relation. The idiomatic relations, we all know, differ in a marked degree among different languages. The idioms are generally learned in hearing-language, and the habit of mind which induces the proper action of an idiom is easily formed in the child's effort to understand oral language. In printing or writing the English language the arrangement of sentences is from left to right; in other languages it may be from right to left, up or down; thus the order of arrangement is arbitrary.

Instantaneous action of a word.

In the reading of a sentence the related words arouse a certain state of consciousness, or a sequence of associations. The arrangement of the words in a sentence recalls in consciousness ideas or conscious activities in a certain, definite, related order. The first action of words, whether isolated or in sentences, is precisely the same as the action of objects upon consciousness; but the function of words, more strictly speaking, is to recall certain appropriate activities—activities appropriate to the words, themselves. The action, too, like the action of all objects upon consciousness, is instantaneous. In observation the action is continuous, but in reading, when the word has performed its function,

it is of no more immediate use: it is therefore of the utmost importance that words act instantaneously, that they in no way obstruct the action of the mind, that they simply and easily perform their function, and that there be no absorption of the mental power in the forms of the words themselves.

Functioning of words.

Teaching reading consists entirely in the presentation on the part of the teacher of the conditions for the functioning of words. This is true not only with the little child, but it is just as true in all stages of human development, and pertains quite as much to foreign languages, ancient or modern, as it does to one's own vernacular.

The law by which every word is learned.

It is the question of questions for those who teach reading, and in fact for all teachers of language, What is the law by which each and every word is functioned? The general law, the law upon which fundamentally all recollection and remembrance depends, may be stated as follows: When two activities, either simple or complex, follow each other immediately in consciousness, the reappearance of one of these activities in an after state of consciousness has a tendency to recall or arouse the other.*

Associated activities are those which follow each other in immediate succession. Now from this general law we deduce the particular law by which printed words are functioned. The activities which are to immediately succeed each other are, first, the effect of the correspondence to the word itself; and second, the appropriate activities. The law, then, for functioning words may be stated as

* Already given in the discussion of Hearing-language.

follows: The effect of the word or its correspondence must be succeeded immediately in consciousness by the appropriate activities which the word was made to arouse; or, conversely, the appropriate activities must be immediately succeeded by the effect of the printed word upon consciousness. It follows that when these two activities immediately succeed each other (the effect of the word or the appropriate activities), the appearance of one of these activities has a tendency to arouse the other —that is, the effect of the word when it appears in consciousness has a tendency to arouse the appropriate activities; and when the appropriate activities appear in consciousness they have a tendency to recall the effect of the word.

One act of association not generally sufficient to function a word.

I have here used the phrase, "has a tendency." If one act of association were always sufficient to function a word, the teaching of the first steps in reading would be a very easy matter indeed. This, we all know by experience, is not true, but that, as a rule, repeated acts of association are necessary. In fact, the whole difficulty is to bring about these acts of association. There is much desultory and promiscuous discussion in regard to methods of teaching reading, but no matter what conditions may be presented, no matter what so-called method may be used in teaching reading, if the effect of the word and the appropriate activities are ever associated, they must be associated under this stated law, and can be by no other. So we can lay down the principle here and follow it: Whatever assists in acts of association,—the immediate succession of the effect of the word and the appropriate activities,—whatever directly assists in these acts of association, may be used in

teaching reading; whatever does not assist should be omitted. This principle gives us a sure guide in the application of the law. **Guide in learning method.**

In the violation of this principle the chief sufferers are the children, to whom unnatural conditions are presented, which obstruct the action of the law by which every word *must* be learned.

Following out this fundamental principle, we can make the following statements of other and subsidiary principles:

Principles.

(1) Every printed word must be learned by one or more acts of association.

(2) The less the number of acts required to function a word, the greater the economy.

(3) The greatest economy in learning a word would be, therefore, one act of association.

We can say, then, that that teaching is best which presents conditions by which a word is learned by one act, or in one state of consciousness. We seek, therefore, for conditions that will bring about those acts of consciousness by which a word may be most economically learned.

The word the obstacle to be overcome.

First, in this discussion, we turn to the word and its effect upon consciousness; and we can confidently affirm that the effect of a word upon consciousness *in itself* arouses no pleasant or agreeable emotions in the child's mind, except, perhaps, by anticipation. A word in itself is a repellent object to the child's mind. I do not mean by this that a child particularly dislikes the effect of a word, but that he is indifferent to its action. On the other hand, it may be as confidently stated, if the child liked a word, if the effect of the word were pleasant to the child, if it aroused his interest, or, in other words, induced pleasing emotions, read-

ing, as Dogberry says, would come "by natur." Were there no resistance on the part of the words, the child would learn the pure symbols, the printed words, with the same ease that he learns the partial symbols of pictures and models.

Short sketch of the history of teaching reading.

We can turn to the history of methods of teaching reading for instruction in this direction. In the first attempts to teach reading, the alphabet method, pure and simple, no doubt was used: the drudgery consisted in learning the names of letters and afterwards combining them by oral spelling. A suspicion was aroused that this seemingly necessary toil might be lightened by interest. The Romans carved the letters in ivory; Basedow, the

Alphabet method.

Philanthropin, made the alphabet in gingerbread, and rewarded successful attempts at naming the letters with delicious bites,—a sugar-coating to a bitter pill. We have had countless primers full of gorgeously colored initial letters as baits,—"A is for apple, so round and so sweet; B is for baby, so clean and so neat;" and so on, *ad infinitum, ad nauseam.*

Phonic and Phonetic methods.

Another prolonged attempt to lessen the difficulties of overcoming words, is found in the so-called phonic and phonetic methods. The phonic method, as we all know, is over three hundred and fifty years old. It was at the time of its introduction a very profitable departure from the pure alphabetic method, and had its origin in some of the earnest minds that worked contemporaneously with Martin Luther. The phonetic and word-building methods have all been earnest attempts to make the words easy and pleasant,—like the old device, of late revived, of comparing elementary sounds to the noises made by animals

and in nature; the "ch" movement to the noise made by a locomotive, for instance. The struggle has been a long one, an earnest and an honest one, but has failed in any reasonable appreciation of the action of the mind in learning words. We are, on this side of the question, about where we began three centuries ago. Baked letters and sweetened sounds still "hold the fort" for artisan teachers.

Thought method.

The history of another phase of the pedagogy of reading is that brought about by the great reformer Comenius,—indeed we may give him for lack of further knowledge the credit of originating it. This movement consisted in arousing the appropriate activities in order to make the associations more effective. Comenius' work began in the time when the Humanists had complete control, and dead languages were nearly the sum and substance of all that was taught. His famous "Orbis Pictus,"* now reproduced, is open to all teachers for study.

"Orbis Pictus."

On page 1 of this book we find:

"ORBIS SENSUALIUM PICTUS,

A WORLD OF THINGS OBVIOUS TO THE SENSES DRAWN IN PICTURES.

I.

Invitation. **Invitatio."**

[Here a picture of a teacher with his finger beckoning, inviting the boy who stands before him, hat in hand.]

"The Master and the Boy. **Magister et Puer.**

M. Come, Boy, learn to be wise.

M. Veni, Puer, disce sapere.

B. What doth this mean, to be wise?

P. Quid hoc est, sapere?

M. To understand rightly.

M. Intelligere recte," etc.

* Published by C. W. Bardeen, Syracuse, N. Y.

On page 3, opposite a picture of a crow:

"Cornix cornicatur,—
The Crow crieth."

Opposite the picture of a lamb:

"Agnus balat,—
The lamb blaiteth.'

This, as I have said, was an attempt made by the great reformer Comenius to associate the appropriate activities and the word by means of pictures.

This device, which is the supposed beginning of the so-called thought method of teaching, has continued down to our time, principally by the use of pictures; nearly all First Readers have followed this plan.

It was found, however, by inquiring teachers, that the object itself aroused the appropriate activities more vigorously than the picture; and in the "Normal Wörter-Methode" we find objects freely used, and some special methods named after the object which is first used,—as for instance, the "Ei-Methode," so called because an egg is used in the first step. It is safe to say that all along the line on both sides, overcoming the obstacle of the word and the arousing of appropriate activities, there have been countless methods, and that these methods have been converging and combining at every step.

"Normal Worter-Methode."

Word method.

The so-called word method was the first recognition of the plain and simple psychological fact that a word acts as a whole just like any other object, instantaneously, and that there is no instinctive attempt on the part of the child to analyze the word into its parts, or to associate it

consciously with its corresponding oral word. Any attempt at analysis, at first, weakens the action of the word, is entirely unnecessary, and at the same time unnatural. To J. Russell Webb and Dr. Gallaudet we owe much in this important step of the word method. To Geo. F. Farnham we owe another great step, and that is a re-presentation of the thought method, or the association of the thought which a sentence arouses to the related words themselves. The work of Mr. Farnham is pregnant with possibilities for the economical teaching of the first steps in reading.

Gallaudet, Webb, Farnham.

I have very briefly indicated some of the struggles to find the way to the best method of teaching reading, many of which have been steps in progress, while others have simply gone back to the starting-point. The work of Comenius, followed by that of Gallaudet, Webb, and Farnham,* has been a tendency in the right direction. The ideal method has not yet been attained; it can be reached only by a complete application of the law under which all associations are made.

It must be established in all thinking minds beyond peradventure that pleasurable emotion must come from the arousing of appropriate activities; that the difficulties may be overcome by the association of the word with the appropriate activities under the white heat of thought; and that the question left for us to decide is, How can the mental result of the appropriate activities be made most effective? Intensity of mental action consists in the holding of mental states in suspension—

Emotions of pleasure aroused by appropriate activities.

* German teachers, Graser, Böhme, and others, have worked very effectively in this direction.

the hemming in, so to speak, of a mental state for the educative action of the *ego*.

The will.

There is one cause of educative action, the will. The will may be controlled by present interest in the act itself or by anticipated pleasure. With the child, immediate pleasure must be the all-powerful motive of intense action; the motive must have for him an immediate content, *interest*. The greater the interest of the child, the more intense the action. The immediate emotional effect of the *word* in itself can be, at best, anticipated pleasure; under *immediate* pleasure, however, of which the appropriate activities are the cause, there is always an intensity of action. The more intense the act of association, the less the number of repetitions necessary for the functioning of a word.

Interest.

I have already discussed at some length the spontaneous activities of the child. I have shown that the child is a born naturalist; that he loves both nature and human nature; that he revels in fancy, in the myth. I have shown that the child learns to overcome the difficulties of the oral language by that persistent energy which springs continually from desire and interest. I hold that the difficulties in the oral language to be overcome by the effort of the child are far greater than the difficulties to be overcome in reading. An oral word is far more complex than a written word. If you do not believe it, try to learn a new sound in some foreign language. More than that, in learning the oral language a child overcomes a difficulty far greater than that of hearing words,—the idiom, or peculiar relation of words to each other in sentences.

Difficulties overcome by the child in learning oral language.

An oral word more complex than a written word.

The child comes to the work of learning to read

with six years of active life; he comes with the most important part of the oral language spontaneously acquired; he comes with his mind full of activities, full of experiences; he comes with the habit of learning language; and his everlasting question is, What is that? He is never satisfied until he knows the name of the object which excites his interest. Face to face with a new problem, the question is, Shall he go on in the same way that he has already begun, or shall a new method, foreign to him, be introduced?

What a child brings to the work of learning to read.

What is the greatest source of interest to the child? What does the child love best? I may seem heterodox in my statement when I say that the child loves best that which is best for him; he loves nature and he loves human nature. This statement may shock some persons who are continually looking upon the negative side of human nature, who see only the bad in humanity, whose commandments always begin with "Don't." The child is attracted, spasmodically and ephemerally, it is true, to that which is bad for him; things which excite his sensuous nature, satisfy his hunger, or his desire for pleasure. A beautiful doll is but for the hour, and then packed away; but a doll which requires a long stretch of fancy to imagine it a human being is dear to the little girl's heart. The child loves *permanently* the best means for development.

What does the child love best?

The use of pictures and objects, as I have already said, is a tendency in the right direction; but we find in the study of the central subjects, in the study of geography, physics, mineralogy, and botany, an inexhaustible source of pleasure and of interest. We see also that in

Natural science.

the study of these subjects there is an organic growth and development of thought, that the thought itself has an organic body, and and that that body is continually growing if the right conditions are used.

Language should grow with the thought.

And, too, the language should grow with the thought itself; the language should be made a means of arousing thought in the child's mind and making new units or combinations by apperception of that which is already below the plane of consciousness. The studies of science, myth, and history are of inexhaustible interest and pleasure to him, and at the same time they develop his thought in the best possible way; and when the thought is being developed, when the interest is most intense, the printed words or their effects in consciousness may be associated with the greatest ease, that is,—unconsciously associated.

Unconscious acquirement.

Here I meet a strong traditional objection: the child learning to read the printed words only that spring from the immediate necessities of his thought would not fancy that he was learning to read; his parents would not think he was learning, and the result would be dissatisfaction in regard to the school-work. I cannot resist here the temptation to lay down a rule fundamental in all education: *That which is best in education, that which is best for the body and mind and soul, is unconsciously acquired.*

No traditional opinion has a stronger hold upon many teachers and most parents than the supposition that the pupil must be painfully aware that he is learning; that he must feel deeply the pressure of the amount of knowledge (*sic*) he is acquiring; that he should rejoice in the pages

learned, the quantity memorized, the examinations passed, the promotions attained. A child skips home from the Kindergarten, or from the Primary School, and the fond parents ask, "What have you learned to-day?" "Nothing," is the reply; "I've had a good time." The despairing mother takes this answer in its most literal meaning, and seeks a school in which the weight of learning is measured, and progress definitely marked. No suspicion ever enters her head that the real indication of progress in character-evolution is not the record of pages learned, but in the acquisition of moral power, demonstrated in habits of action.

Intense mental action.

I come back to my point of the intense mental action aroused by appropriate activities. From the time the child first enters school, the purpose of the teacher should be to continue in the best possible way the spontaneous activities of the child in the directions which nature has so effectively begun. We will suppose, then, that he has lessons, experiments, observations, and investigations in all the central subjects; that they form the core of the work done by the teacher; that the child's mind, his whole being, is brought face to face with the truth,—the intrinsic knowledge,—and consequently with intrinsic thought; and that at the moment when the word is required it is given orally, and at once written rapidly in a plain, beautiful hand upon the blackboard. I am now speaking from considerable experience. The child is interested in the appropriate activities; they have been aroused in his mind, they have become intense, and just at the right moment the word from the blackboard acts upon consciousness, is associated with the appropriate activities, and one

Writing.

act of association is sufficient for the functioning of the word. Not only are the words presented, but sentences showing what the child has discovered in experiment and investigation are also there.

It will be readily granted that a theory of teaching reading which adapts in the most economical way the conditions for the action of mental laws is of the utmost importance. Taking into consideration the vast amount of time spent in learning to read and the unquestioned pedagogical value of reading as a means of education, an approximately true theory of teaching the first, and indeed all, steps of reading must be placed first in importance. In the history of education there are more theories and methods of teaching reading than of teaching any other subject; therefore, at the risk of some repetition, I will present the theory of the method of concentration, for the purpose of giving a working hypothesis for your investigation.

Time spent in teaching reading.

Theory of concentration.

First, under this theory, the entire time of the learners can be spent in the study of the central subjects. These subjects, if adapted to mental action, will excite and continually enhance interest. Second, the intrinsic thought developed will create the necessity for both spoken and written words and sentences, the latter to be presented to the child from the blackboard. Third, the teaching of reading is to be unconsciously, on the part of the pupils, an auxiliary to the development of thought; the difficulties of the written and printed word being overcome by the energy aroused by intrinsic thought. Fourth, the presentation of the words and sentences at the proper moment will

serve to enhance the thought itself, because the printed words are made a necessity, and, as such, will react upon the mind and assist in mental action. When a sentence which has grown out of a child's investigation, and has been made by the child itself, appears upon the blackboard and is read by the child, this action cannot fail to continue and enhance the original thought. Fifth, the teaching of reading in itself, the mere learning of words and sentences, will take no appreciable time either of the child or the teacher; thus reading will continually serve as a means of enhancing thought.

Teaching reading takes no appreciable time.

This latter proposition, I grant, is indeed a very strong one, and it should not be accepted without the most careful study and investigation on the part of teachers; but I firmly believe that the proof of the theory is at hand. It may be here asked why this theory has not been applied to any great extent. The greatest factor, hitherto, in all teaching has been the study of forms under the hypothesis that forms must be first learned by themselves for use thereafter in the development of thought-power. The history and present status of work under this hypothesis is well known to us as teachers. The hypothesis under the doctrine of concentration is that each and every step in the development of reading-power must be taken under the immediate impulse of intrinsic thought. Elementary science in primary schools is an innovation, and as a rule has been hitherto taught as a subject by itself. Many teachers consider it an intruder infringing upon the time of both pupils and teachers. Under the doctrine of concentration, reading is subsidiary

An old hypothesis.

Hypothesis of concentration

and auxiliary to the study of the central subjects.

Reproduction of thought.

I have already discussed the countless opportunities for the study of the elements of science and of history. There is no doubt that the development of the mind may be made organic, that subjects may be learned in their relation to each other, developing a body of thought which requires at every step the adaptation of language. The more nearly an educational theory approximates the truth, the greater the skill required on the part of the teacher; but the question today is not of skill, but of theory: Is this theory true?

Transference of habit.

I have discussed the marvelous facility with which the child learns and overcomes the difficulties of the spoken language, which are without question greater than those of the written or printed language. Although a full consideration of the theory of thought-expression does not properly have a place in the scientific discussion of theories of attention, still this exposition would be incomplete without some reference to the strong influence of expression upon the acts of association required in the learning of words. The paramount act of expression which should follow and enhance acts of association is that of reproducing immediately the word or sentence written upon the blackboard by the teacher. The pupil sees the teacher write the word rapidly and beautifully. His fixed

Imitation.

habit of speaking that which he thinks, and thereby imitating that which he sees, is carried over and made permanent in the habit of expressing thought, by writing the words he sees written. When the teacher writes the word, he is under

the influence of the thought, the appropriate activities with which the word is associated are aroused.

We all recognize the fact that pupils, especially the little ones, have an overwhelming desire to imitate their teachers. We should know that children will do wonderful things spontaneously, unless a feeling of difficulty restrains them. It is easy for a skilful teacher to arouse an intense interest in an educative subject. Just at the moment when the interest is at its height, she introduces a word orally, immediately writes it upon the blackboard, erases it, after one glance by her pupils, and says, "Say that with the chalk!" The little ones rush to the board, under a strong desire to express the thought, and quickly reproduce the word. The first attempts may be crude, but they are genuine efforts and with repetition will improve. Children write words for the first time with great ease, decision, and distinctness, if the unity of the action is unbroken by fear.

Making unnecessary difficulties.

Most teaching of reading—in fact, teaching of every subject—consists in presenting difficulties and impressing children with the obstacles to be overcome, thus stultifying their otherwise free action.

Unity of action.

When a child attempts to write a word under the impulse of thought, the act of association is continued, made more intense and therefore more effective. He makes the word that is being functioned, the word that is afterwards to act upon consciousness and recall its appropriate activities.

Expressing thought by writing, the means by which it was received, is far more effective in its reflex action than is oral reading. We all agree to the statement that the child's attempts to

speak assists him in learning in the most effective way the oral word : is this not as true of the written word ? Carry the idea further: the child makes discoveries by his experiments in physics or by his investigations in botany; he wishes to tell something. He tells it orally, and is easily induced to express the same thing in writing. He goes to the board and tells the story of what he has seen. He does this with great earnestness; there is a unity of action of mind and body, his desire to express thought overcoming all difficulties. Pupils may thus be led to write original sentences, spelling, punctuating and capitalizing with complete accuracy.

Naturally the question follows from the teacher, What have you written ? He looks at the sentence so fresh in his mind, and tells his teacher just what he has written, in a perfectly natural tone, because alive and interested in the thought. This is the proper beginning of oral reading. The child, as he glances along the sentences, may express his thought in the words he has already written, or he may express the same thought in other words. The effect of expressing his thought in either way, in the new words or the words he has himself written, is the same; that is to say, the oral expression of thought enhances the thought itself, for it is genuine, it is the immediate reflex of his conscious activities.

First oral reading.

The oral word plays a very important part in teaching the written word. The child, when he enters the school, has mastered oral language adequate to his own thought; he can hear every sound in the language; he does not distinguish these sounds as separate and distinct, but hears the oral

words as wholes,—for all practical purposes, he is master of them: they act instantly upon consciousness, and the appropriate activities are aroused,—he knows each sound in combinations of sounds, or oral words. Further, he can use the various elements in the pronunciation of words with perfect ease. Still further, the words have all been unconsciously associated with their appropriate activities—have, indeed, become a part of their appropriate activities; the word recalls them, and, in turn, the appropriate activities recall the word. Now, if the oral word would of itself bring into consciousness the appropriate activities with a sufficient degree of intensity for economical acts of association when the written word is presented, then the use of the oral word would be amply sufficient for the teaching of the written word; the word method, pure and simple, which means the action of the whole word naturally upon consciousness, and the association of the written word with the oral word, would suffice for any step in teaching reading. But the oral word will not excite the appropriate activities and intensify them sufficiently for an economical association of the written word. The thought awakened by the oral word alone is not sufficiently intense, and the resulting action of association, therefore, is weak. It is true that some oral words may arouse the appropriate activities so as to make the acts of association effective, but it is not generally true, and a teacher cannot rely upon the oral word alone to bring about these necessary acts. The intensity comes from such direct contact with objects in investigation and experiment

Relation of oral language to reading.

as will arouse intrinsic and therefore interesting thought.

Assistance of the oral word in teaching reading.

While the oral word has its place in arousing the appropriate activities, still there is not intensity of action sufficient to unite the written word with its meaning. Teaching is the presentation of conditions for the most economical educative effort. The effort of the child is directed to investigation, to experiment, to intrinsic thought under the highest effort of the mind, and the printed words or their correspondences in consciousness are melted, fused, and blended with the appropriate activities. And here lies the great economy of conscious action: the child's whole mind is absorbed in that which has the greatest developing power, that which does him the most good, words coming in incidentally to help the mental action. These acts of association are continued by the attempts of the child to express thought in written words and original, written sentences. Then the child tells what he has written in other language than the words on the blackboard, or he tells the thought orally in the exact language he has written. These are means of enhancing the thought. To repeat a fundamental statement, everything that economically assists in acts of association should be used; everything that does not assist in such acts should be eliminated.

One cannot fully discuss the subject of teaching reading without discussing some of the arguments for the formal methods which have little and sometimes no relation to the thought itself; which propose to overcome the seeming but not real difficulties of words themselves. To the A, B, C method very little attention need here be given, except to

A, B, C method.

expose this very important fact: when the child learns painfully one letter after the other, the names of which have no relation whatever to the pronunciation of the words, the whole attention of the child, so far as it can be gained by the energy, tact, and devices of the teacher, is concentrated upon the forms of the words. By an artificial and arbitrary method the child's power is sunk in the form. His whole attention, whole conscious action, is absorbed in the form of the word, and consequently the appropriate activities are left entirely in abeyance; there can be no act of association when the child's whole mental power is bent upon the forms of the words and the parts of the words. In this intricate formal study there is little or no educative mental action. No method illustrates this so strongly as the A, B, C method. No defender of this method, and there are many, has ever yet tried to explain the mental effect, or the psychology, of learning the names of the letters. The alphabet method develops a fear in the child's mind; the struggle is to overcome certain seeming difficulties. The voice of the child in pronouncing the names of the letters and in combining sounds into words, two very distinct acts with no relation to each other, fully shows the uncertainty of his mind as with a drawl and a groan and a whine he utters the names of the letters and painfully pronounces the printed word.

Mental action absorbed in form.

Voice of the child an indication of a wrong method.

The phonic method, which succeeded the alphabet method, as before stated, was the first attempt to improve the latter method, and its value consists in lessening the apparent but not real difficulties. The phonetic method grew out of the phonic method; it may be well here to define them

Phonic method.

Phonetic method.

both. The child is already master of a large number of oral words,—can use them in expressing thought with the greatest ease. In the word method the written word as a whole is associated with the oral word as a whole; the child learns written words precisely as he has learned oral ones.

Phonetic methods.

By the phonic method the pupil is trained directly and consciously to associate the separated and isolated elementary sounds of which the oral language consists, with the separated and isolated characters of which the printed language is composed, for the purpose of developing the power of associating, independently, the sounds of words with the letters, and by this means to associate words with their appropriate activities without the direct aid of a teacher. There are two ways to associate sounds with letters: the first is independent of the written word, the pupil acquiring the relation of sounds to letters without regard to the written words themselves, so that the characters of which a printed word is composed may recall the corresponding sounds, and thus enable him to combine the sounds into oral words; the second is by teaching sounds in direct relation to the printed words, pronouncing the words slowly or spelling by sound. This is, I believe, a fair statement of the general processes of the phonic method.

Written English language fearfully and wonderfully made.

The written English language, however, is fearfully and wonderfully made. Its spelling or combinations of printed characters is one of the awful and *unnecessary* obstructions in the way of English-speaking children. A single sound must be associated with a number of characters, different letters, or combinations of letters. This great difficulty educators have sought to overcome by

the introduction of phonetic methods of teaching reading. Phonetic methods, like Mr. Pitman's and Dr. Leigh's, consist in modifications of the characters of the English letters so that each element in the English language may be associated with a distinct but modified letter-form. A purely phonetic language, which so far as I know does not exist, would consist of each element having one distinct character, one letter-form with which it would be associated. The attempts of Dr. Leigh and others have been to change the already existing letters or printed characters so that the association may be made once and for all between a certain sound and a certain character.

It must be granted that both methods can be used with great facility and great apparent results. **Apparent results.** A child who has nothing better to interest him will make out new words, however difficult, with marvelous ease by the skilful use of either phonic or phonetic methods; but the same objection to the alphabet method may be applied here, —the child's attention is mainly directed to making the association between the forms of the printed words and the united sounds. The intense formal action of the mind, hems or prevents the appearance of the appropriate activities. By the use of each and all of the formal methods of teaching reading a fixed habit of attention to the forms, and the forms alone, is the inevitable result. The spontaneous unity of action is broken, and can be regained only with the greatest effort on the part of the victim. The miserable oral reading which is so common, and which elocution hopelessly strives to overcome, is a direct **Unity of action broken.**

product of this broken unity of action. The unnatural and monotonous tones of readers show that their attention is absorbed in form, and in form alone,—there is little or no free thought-action.

The word method not a Chinese method.

An argument very commonly and effectively used in defence of these obstructive methods is that if the child learns the words as wholes he will never acquire the power to make out new words. It has even been claimed that the word method is a "Chinese method." Nothing can be farther from the truth than this ever-recurring stock argument. The printed word acts upon consciousness precisely like any other object. The power on the part of any or all persons to recognize new forms or new objects, units of attributes, whose elements lie below the plane of consciousness, is beyond all doubt. The child sees a new tree or a new face or a new house, which he recognizes instantly and discriminates from all other objects. The same can be said of words the child has never seen before. The power of association or synthesis is the strongest, is indeed the fundamental, power of the mind, ever acting spontaneously, ever recognizing and classifying by means of analogies. This may be illustrated by learning to hear language. Our spoken language consists of forty-two (more or less) distinct elements; the same sounds are ever recurring in new words acting upon the ear. When a sound is known, the recurrence of that sound in any word acts in the same way. The child is perfectly unconscious of any analysis, but the law of analogy, of synthesis, of apperception, powerfully and persistently acts,

and thus the power to hear words is enhanced, and the process becomes easier and easier.

That which is true of the acquisition of speech is just as true of the acquisition of the printed language; whatever is spontaneously acquired in one form of language may be in the other. The word-forms of printed language consist of twenty-six characters. These characters are identical in an immense number of words, the same recurring in many words; the influence upon the mind of a familiar character in a new word is the same as in all the previously acquired words, precisely as the color red is instantly recognized in countless objects. Thus the "Chinese" argument has no foundation in psychology.

Psychology of seeing objects.

The many methods and devices — alphabet, phonic, phonetic, and other schemes of teaching the first steps in reading—which entangle pupils' attention in word-forms and word-analysis are really so many obstructions to the development of thought power, and do not economically assist in thinking by means of printed words. Many inventions sought out and applied by teachers, with arguments which seem to be right, are really devices which defy the plainest and simplest laws of mental action. "There is a way that seemeth right unto a man, but the end thereof is death." If a child, acting under the energy aroused by the appropriate activities, through the study and investigation of subjects which arouse pleasant emotions, can learn the word immediately on its presentation, and can reproduce that word rapidly upon the blackboard, then the question of method is settled. He writes words without knowing the names of the letters, or without being able to ana-

Attention to form obstructs mental action.

lyze them. He does it spontaneously, in precisely the same way that he has learned to hear and to speak. Every word he writes, acting under the energy of appropriate activities, strengthens the association and prepares him for the learning of a new word. The beautiful and the true fact in regard to the method suggested, is that the child's mind is absorbed in intrinsic, educative thought; the acquisition of words is incidental, but at the same time helpful, to the best mental action. Still the questions may be properly raised, cannot the power of the child to make independently the associations of new words with the appropriate ideas be enhanced? Is there not a strictly pedagogical use of phonics?

Absorption of the mind in educative thought.

Right use of phonics.

An oral word consists of one sound or a unit of sounds uttered or articulated in immediate succession. In words of more than one syllable there is a slight perceptible pause at the end of each syllable, and in uttering sentences there are also perceptible pauses between the words. A syllable is a unit of sounds uttered in immediate succession. Each sound requires for its utterance a definite position of the vocal organs. In order to utter each succeeding sound, there must be a change in the position of the organs; this change is made in time, and therefore, though the pause is imperceptible to the ear, there must necessarily be a pause between the utterance of two sounds in a syllable. If this imperceptible pause did not exist, there would be a great complexity of intermediate sounds which would modify the word radically. That these intermediate sounds do not exist is proved by the fact that if the words are pronounced with a perceptible pause between con-

Unity of action not broken.

secutive sounds children will understand them readily, and will indeed perceive no difference between the common utterance of syllables and the slow pronunciation.* The child has power to hear oral words and to utter oral words. He has been in full practice for five or more years in this direction, and it is certainly not unpedagogical to pronounce words slowly before children—that is, with perceptible pauses between the sounds—and have them immediately recognize what is said. By repeating these processes in the first grade without any association with the printed words, the child takes a step in ear-training which will enable him to relate the sounds in words slowly pronounced.

By writing words the pupil gradually and consciously discriminates the characters that make up the word; and by holding in his mind the oral form of the word and intensely associating it with the written characters,—a necessity in writing,—the elements of both forms of the word reach a stage in consciousness when, by a little judicious, careful teaching, the power of analogy—of associating the sounds with the letters—may greatly assist in associating the effect or correspondence of the word, with the appropriate activities. Little children will readily understand any word when pronounced slowly, *if it is done naturally;* and after a short practice in hearing-words they may be led to pronounce slowly themselves; then they will

Power of analogy.

* The term "slow pronunciation" is here used instead of "spelling by sound" or "word-analysis." It is a term used by the Germans, who have had most to do with the teaching of phonics—"langsamer Aussprache."

pronounce in this way as the teacher writes slowly on the board. And so phonics may be effectively used without breaking the unity of thought and expression.

True use of words. It should be ever borne in mind that the real use of words is to arouse educative thought. There should be the least possible entanglement in the form of the word; the action of the printed word upon the mind should be instantaneous and effective. There should be the minimum attention to the word, the minimum consciousness of it. No one can observe the work of pupils from the primary grades to the university without being amazed at the impotency of many to think by means of the printed word; the ability to really study text is rare, the ability to merely memorize words is common.

Study. The study of text differs from common reading in the intensity of those acts of the will that hem the flow of consciousness. Now if the child early forms the habit of believing that he reads when he pronounces words,—and by the tricks of the phonic and phonetic methods he can acquire great facility in mere pronunciation,—there is great danger that he will never acquire the fixed habit of thinking by means of words. He will suppose that the pronunciation of words is reading, and afterwards, in studying, he will suppose that learning a lesson means committing words verbatim. This is one of the most terrible evils in all teaching—this habit of pronouncing and learning words disassociated from the thought.

Learning pages verbatim.

The great benefit of the method of concentra-

tion in teaching reading here presented, is that the child will never fancy that he is reading unless he has the thought aroused by the words; if the words do not arouse the thought, he will struggle to that end, will never read aloud without the closest thinking, and will never study without the most intense thinking.

The pedant.

One awful product of this isolated word-learning is the pedant, who fancies that he knows a great deal because he can recall a great number of pages. The only valuable thing is the thought itself and the development of the reasoning powers. Reading is accessory to these, and is a necessity at every step. Under the concentration method of teaching reading, written words and sentences are made the immediate means of intensifying thought. The sentence which the child writes upon the blackboard, and the sentence which he reads from the blackboard, or from the printed page, immediately enhance the thought evolved by investigation.

Use of reading in education.

The concentration method of teaching reading proposes still more: it proposes that reading shall be used from the beginning to the end in the enhancement of intrinsic thought; that there shall be no desultory or promiscuous reading in relation to education. A child who learns to read properly will practise a great deal at home; for instance, he will read books, magazines, and newspapers,—and there is no objection to such reading in its place,—but in the school all the reading should be a direct means of intensifying, enhancing, expanding and relating the thought evolved by the study of the subjects. In the study of geography, descriptions of the surface-forms and the natural

and political divisions of the countries, travels, and national literature should be read. The same can be said of all subjects. The reading in botany, in zoology, in history,—in fact, all reading,—should be concentrated upon the study of the central subjects.

Interest in reading continually strengthened.

The great economy of these suggestions is apparent. The interest in reading will be continually strengthened, for no subject can be really studied without a continual growth in interest. The interest is excited, stimulated, and enhanced by the concentration of *all* reading upon the cumulative processes of thought.

Concentration of reading upon central subjects.

Most school reading is desultory, promiscuous, and unrelated to the subjects taught; some of it is in a good sense educative; much of it void of sense, and of no literary value whatever. The proposition of the theory of unification is to concentrate directly all reading—first, last, and at every step—upon the central subjects of study in hand: it proposes that geography shall be enhanced by descriptions of countries, travels, and stories; that interest in science shall be kept aglow by delightful accounts of research and discoveries; that history shall be illuminated by the most precious literature, and explained by the mythical treasures of the ages. When, for instance, the intensely interesting story of the first battle of the Revolution is studied, the pupils shall hear "a hurry of hoofs in a village street," shall see "a shape in the moonlight, a bulk in the dark, and beneath, from the pebbles, in passing, a spark" which "kindled the land into flame with its heat." Or when the wonderful story of the Greeks is told, it shall be accompanied by the glorious lyrics of Homer.

Literature is the flood-tide of national growth, and loses its power when not immediately related to the peoples who made it possible.

Nothing but literature should be read by children. It may be difficult to define literature. Literature is the adequate expression of truth. The truth itself is beautiful, and its expression should, therefore, conform to that which it expresses. Literature is the genuine expression of truth, the pulsation of the soul. Every sentence in literature says something. There are no extraneous forms, no forms of speech without a direct purpose. Children should read only the sweetest, purest, and most truthful literature.

Children should read nothing but literature.

It is a common mistake to fancy that because little folks cannot pronounce every word in a lesson, or because they do not understand the meaning of every word, they should not be permitted to read that lesson.* The question is not of words: from whatever source in good reading a child loves to draw, let him; *reading is thinking, not the pronunciation of words.*

Pronunciation of words, not reading.

The demand here made is, then, that from beginning to end the child shall think; that the action of his mind shall be upon that thought which he most needs for his own growth and development; that symbols shall act upon his mind immediately, attracting to themselves the least possible

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*Experience proves, beyond a doubt, that a child will learn words like "temperature," "aquarium," "hydrogen," "dissolved," just as easily as he does "cat," "rat," and "mat," if there is behind the long words an intensity of interest. It is the *mental energy* that *impels* the acquisition of the word. The mechanical learning excites the lowest grade of interest and energy.

attention; that he shall early form fixed habits of thinking when he reads, and of never fancying that he is reading unless he is thinking. Thus reading may be made, next to observation, the greatest means of mental and moral development.

X.

MODES OF EXPRESSION.

Attention and expression in evolution.

ATTENTION and expression are the two modes or processes of human action which have had most to do in the evolution of the human race. If we admit the working hypothesis of evolution, that man's physical, mental, and moral powers are the products, the creations, resulting from a long succession of acts of attention and expression throughout countless generations, we must admit that by attention the afferent nerve tracts were created and developed; that by expression the efferent nerve tracts sprang into being and power; and that the great central ganglion, the brain, is the product of continuous acts of both expression and attention.

If we are not prepared to grant this comprehensive working hypothesis of evolution, but prefer any other theory for the beginning of man, we must still admit that attention and expression have played most important parts in the development of the individual and of the race.

Relation of attention and expression.

These two modes of human action, attention and expression, are organically related by *motive*. The motive for attention is found in the motive for expression; the demand for an act of expression is a demand for attention and reflection. Attention and expression together are the action

and reaction of the whole being in mental and bodily movement.

Modes of expression.

Expression may be generally defined as the manifestation of thought and emotion through the body by means of the physical agents. The modes of expression are:

(1) Gesture.
(2) Voice.
(3) Speech.
(4) Music.
(5) Making.
(6) Modeling.
(7) Painting.
(8) Drawing.
(9) Writing.

Products of expression.

All the works of man's hand and brain are the products of these forms of expression, of thought manifestation through the body. Language is by far the greatest outcome of thought and expression, and is at the same time the best means of studying human development in every phase; each word, each idiom, tells its marvelous story of the strife and struggle of the being in the effort to express thought. The language of a people is its ethnographic body created by its composite soul.

Language.

Tools and instruments.

Next to language may be placed the tools and instruments which man has used through all the ages in manifesting his needs and his aspirations to others. Art products which manifest higher thought may be placed next, followed by construction, or building. From the latest modern edifice to the oldest ruin, we trace the growth of man's skill and intellect. Through these creations that have sprung from human life and human spirit we interpret and understand man in each and every stage of human growth and development. Language gives us the longest vista for interpretation; implements and instruments of use, the

Art products.

second; art, next; and last, the products of imagination expressed by building. Morgan,* in his great work, "Ancient Society," marks the transition from one stage of savagery or barbarism to another,—the successive steps of lower civilization,—by certain definite creations of the human mind. Thus the middle stages of savagery "end with the invention of that compound weapon the bow-and-arrow;" from savagery to barbarism, the transition is marked by the invention of pottery; and from barbarism to civilization, by the invention of a phonetic alphabet.

Marks of transition from one stage of society to another.

The aim of the ethnologist is to discover the products of man's skill all along the line of human development, in order to measure his physical, mental, and moral power in each and every stage. What has been said of the race is true of the individual: all education is by self-effort; the two fundamental modes of self-effort are attention and expression; the power of attention culminates in expression, and is interpreted by it; self-effort in acts of attention and expression, results in enhancing physical, mental, and moral power. Sweep all the products of human expression, all the creations of the human mind, from the face of the earth, and the infinitely greater product will remain—the man himself, the developed creator, ready and able to re-create. Thus the history of the evolution of attention and expression is the inner history of the human race.

The greatest product of attention and expression.

Without attempting to discuss at length some exceedingly interesting and instructive problems

Important questions.

* John Fiske, in "The Discovery of America."

in human growth, we may here ask several questions that will serve us as guides in future investigations. First, was there an order or organic succession in the development of the modes of expression? That is, did one mode spring from the development of a preceding mode or modes of expression? Is the order here given a fair working hypothesis of the successive order in the development of the different modes of expression? Had the exercise of each and every mode a pronounced influence or reaction upon human development? Could any one of the modes of expression have been omitted without serious detriment to human growth? Would it have been possible to omit one mode and substitute another or others in place of it? What are the relations of these modes each to the other in evolution? At any stage of human growth was it possible to intermit the exercise of any one mode? To group all these questions together as a general whole, we may ask the question: Has the exercise of each and every mode of expression been an absolute necessity in the evolution of the human race? We may contribute in some measure to this discussion by an attempt to investigate each mode of expression, in order to determine the factors which enter into each, and also, if it be possible, to understand the results of the exercise of each upon the whole being.

"Necessity is the mother of invention;" it is indeed the impelling influence to most human action. We can interpret the evolution of the modes of expression by understanding the motive which gave rise to them, or that which made them a necessity. Motive is the impelling power of all

action, controlling and directing the will. The general content of motive is necessity, and necessity may have a physical, mental, or moral cause. Fundamentally, the motive of human action is self-preservation; a higher motive is the preservation of family; a still higher one, preservation of community, and desire for the best good of a nation; and highest of all, self-abnegation, the desire for the best good of all mankind. Out of the instinct of self-preservation probably all the motives for human action have arisen. Self-effort, or action of the being, impelled by motive and under the direction of the will, is intrinsic to development. Motive, the impelling power of all human action, is the main factor in human development. Human growth is measured by the grade of the motive,—the higher the motive, the higher the human action; it determines method and controls result. The inner secret of all education may be found in the development of motive; motive which determines the kind and quality of thought, the method of action, the physical functioning, and the externalized thought. Expression, then, is fundamentally the means of developing that which is noblest in a human being—the impelling power to action. In all action under motive, the executive power of the ego, the will is brought into continuous exercise. In short, we can say with truth that there is nothing to be developed in the human being but motive; that everything else follows as a sequence; and with equal truth, it can be said that unexecuted motive is negation of action, disintegration of thought processes.

Motive in expression.

Every act of expression must be preceded by certain definite conscious activities; without

Relation of motive to thought.

thought, there can be no expression. The motive determines the intellectual action, and inspires that continuity or persistence of will which impels execution.

Physical exercise. All acts of expression demand corresponding physical exercise; a particular agent of expression is called into play, and is enhanced by the action of the whole body. The inward impulse or desire finds expression in outward form or object; as the Creator manifests Himself to man through forms and qualities of matter, so man manifests himself to his fellow men by formal creations.

Influence of skill. The externalization of thought is by means of the physical action called *skill*, whose developing influence upon the being may be briefly stated: *First, the cultivation of motive, the intrinsic quality of the soul. Second, the demand for certain, definite mental action; the intensification of that action as a preparation for expression; the enhancement of conscious activities by the reaction of the physical exercise upon the mind; and also by the continual conscious and unconscious criticism of the forms in the process of expression, leading to a re-shaping of forms. Third, the continuity of will action in the execution of motive. The will depends fundamentally for its power and continuity of action upon expression. Fourth, the exercise of the physical agents in acts of expression. This exercise is brought about by the striving of the will to make skill in expression adequate to thought; the health, growth, development and elaboration of the body as an instrument of attention and expression depends mainly upon the variety, kind, and quality of acts of expression. Fifth, expression demands either reflection or at-*

tention, or both. Attention has for its basis the motive of expression. This implies that the trend of all human thought is toward expressive action; that thought which does not end in action dies or stagnates.

Relation of expression to attention.

We have, then, as guides to the study of the developing influence of the modes of expression upon the race: (1) Motive; (2) Thought and emotion; (3) The training of the will; (4) The perfection of the body as an instrument of attention and expression; (5) The relation of expression to the evolution or development of psychic power.

All changes of the body which manifest mental states—changes not included in any of the other modes of expression—may be classified under the general name of gesture. Gesture comprehends what is usually called pantomimic expression, for lack of a better term; it includes, in fact, all the movements of the body or its organs, aside from the production of voice, which in expression of thought do not require some artificial addenda or tool, such as pen, pencil, brush, or other instrument or implement. Gesture, no doubt, was in the human race the primitive or elementary mode of expression. It marked the first glimmerings of intelligence, the dawn of mental power; its development has characterized each step and stage of progress; it is the one universal mode of expression common to all consciousness. And while its forms present definite limitations, it can still be said, to have an almost unlimited range in the manifestation of conscious activities.

Gesture.

Out of this primitive mode of expression it is probable that all other modes of expression, with the exception of voice, music, and speech, were

Gesture a primitive mode of expression.

evolved. We can very easily understand how a gesture, a form in the air, might suggest a more enduring form traced in the sand or soft earth. As touch is probably the primitive and fundamental sense, out of which all the other senses have been evolved, so gesture, the primitive reaction of touch, is the germ out of which were developed making, modeling, painting, drawing, and writing. The actions of the conceptive modes of expression are the effects of touch upon a medium of sufficient density to retain the impression. It is an easy step from a form traced in the air to a form traced upon paper, or moulded in clay.

Relation of gesture to voice.

At first, gesture enhanced the expressive power of the inarticulate voice. The rudimentary, inadequate speech of the savage is accompanied by descriptive or elliptical gestures. Gesture supplies the missing link, enhancing at every step and stage the development of articulate voice, and remains to-day the greatest means of explaining and emphasizing speech. As a means of enhancing thought, it is comparable only to the voice emphasis itself. From the manifestation of the crudest thought to the emphasis of the highest intellectual action, the development of gesture as a means of expression may be traced. That which was the rude movement of the untutored savage has become the mode of expression that distinguishes the highest culture.

Relation of gesture to music

The relation of gesture to music is exceedingly intimate. Gesture may be used to express the lowest possible acts of intelligence, but, like other forms of expression, it is capable of a development co-ordinate with the evolution of the highest thought and feeling. Dancing may be called the

physical accompaniment or the gesture of music. It is a well-known fact that all religious music in savage, barbarous, and the early civilized stages of man was accompanied and emphasized by rhythmic bodily movements. I have already intimated the close relation of gesture to the art or conceptive modes of expression. It is but a slight step from a pure gesture to the expression of thought by means of an instrument,—a stick, brush, or pencil: the same laws of physical movement which control gesture are equally applicable to the expression of thought in painting and drawing. The influence of gesture upon the development of the body is of the highest significance; ease, precision, equilibrium, the essentials of grace, are necessary to freedom of movement, and to mental and physical well-being. Gesture has a marked reactive influence in this direction upon the physical organism, enhancing skill, developing higher and more subtile co-ordinations. Grace or economy of bodily action, by the nice adjustment and co-ordination of the agents of the body, is the main educative physical product of this universal mode of expression.

Gesture and the conceptive modes of expression.

Gesture and grace.

Voice, or vocalized breath, may be classed in the same category as gesture ; it is an open question which preceded the other. Voice, like gesture, is common to all consciousness, and both were probably the earliest, the best apprehended, and the best interpreters of human desires. Indeed, gesture and inarticulate voice, out of which were evolved all the other modes of thought expression, to-day remain the most effective means of expressing pain or pleasure, interest or indifference, attraction or repulsion ; universal mediums by which

Voice.

the finer subtilties of human thought and passion stand revealed. Probably inarticulate cries and pantomimic movements of the body had a common and simultaneous origin, or at least immediately succeeded each other. Voice is in its very nature rhythmic, subject to inflection or cadence—the reflection of conscious action; the highest inflection of voice corresponding to the highest inflection of thought, or emphasis. Gesture supplements the action of the voice, and voice in turn supplements gesture. Out of inarticulate voice the qualities of articulate sounds were developed; or, to state it better, out of the crude qualities of inarticulate voice was evolved human speech or articulate voice.

Rhythm.

Articulate voice.

Voice and music.

The instinctive rhythm of inarticulate voice led naturally to the more pronounced rhythm of cadenced or metrical expression. Rhythm is the inflection of sound; melody is the mode of inflection; and harmony is the unity of inflections. Vocal music is voice, in which inflection, melody, and harmony are metrical in a higher degree, with more pronounced intervals, than in voice proper.

Function of music.

Music is the means by which joy and grief, pain and pleasure, ecstasy and woe, when all other modes fail, express themselves.

> "Thoughts hardly to be packed
> Into a narrow act,
> Fancies that break through language and escape,"

find expression and voice in this most divine of all God's gifts to man.

We are told that savages take the greatest delight in rude attempts at vocal and instrumental music. Schweinfurth relates that the cannibal in

the heart of Africa will sit with a rude instrument of two strings and thrum all day long, filled with the keenest delight. Music from the beginning has been used as the distinctive mode for the expression of the deepest religious emotions and the strongest sentiments of patriotism. The educative function of musical expression is to cultivate and enhance those emotions which influence, in the highest degree, the motives of man.

Music a means of spiritual growth.

The relation of music to language is of the closest nature. Music explains, interprets, and glorifies poetry; it is the natural medium for the manifestation of poetic thought; it blends, harmonizes, and enriches the whole being. The highest formal beauty of speech consists in its rhythm, melody, and harmony. Vocal music, in the cultivation and development of the voice, plays a most important part, and its influence over speech is of immense value. When language fails, when argument is useless, the marvelous power of music comes in, with its persuasive, controlling and compelling influence, arousing flagging zeal, developing enthusiasm, cultivating the highest religious feeling, and enhancing courage and heroic endurance.

Relation of music to speech.

That which is best for the soul is ever and ever the best for the body. Exercise in vocal music finds its highest physical outcome in the rhythmic articulation and adjustment of the agents of the body, one to the other, blending, harmonizing and strengthening them, furnishing, through reflex action, a means for the development of their correspondence in all modes of expression. The rhythmic adjustment of the bodily agents or members is an important element of grace, and

Vocal music and physical exercise.

true grace is the highest indication of mental, moral, and physical power. The normal exercise of the vocal organs in music has a marked reactive influence in the development of the whole body, not only in rhythmic adjustment, but in the development of the lungs and heart. The utterance of musical sounds demands the perfect ease of bodily action, the unrestricted use of the lungs in breathing, and the normal circulation of the blood. In short, the exercise of the voice in music demands perfect physical freedom; the slightest tension, through dress or other restrictions, interferes with and prevents the free action of the voice.

Music cultivates the emotions.

In this brief outline of the educative effect of music, it may be said that an absolute necessity for the cultivation of the higher emotions is apparent. Without emotion man is nothing. What man is, depends upon the nature of his emotions. Music has ever been used effectively in arousing in him the highest aspirations and the deepest reverence. The history of music is the history of the development of the emotions of the human race from the beginning. Music has, then, for its function the cultivation of the spirit, or the higher development of the soul of man. We do not mean by this that the highest may not be made utterly degrading. In fact, the rule is that the more effective any one means becomes, when properly used, the more degrading that means may be when it is used to incite in the human soul that which is low and sensual.

Making.

Making defined.

It is a long step from the discussion of the purely spiritual manifestation of thought through emotion to that manifestation of thought which

we term, though ambiguously, *making*. Making has for its general motive self-preservation, health, and the general comfort of man; it supplies the great underlying needs, which form the indispensable basis of his spiritual life. In short, making is the material basis of life and living, the function of the object made being essentially the practical use of that object. Making may be defined as the complete externalizing of individual concepts—concepts acquired either by observation or constructed by imagination. When derived from observation alone, the process of making is called imitation or copying; when making is a manifestation of an individual concept constructed by the imagination, the term origination or invention may be used.

Products of making.

Attention has been repeatedly called to the products of man's hand and brain—tools, instruments, buildings, and all the countless objects that have been evolved in human minds and expressed by human hands. The motive in making is the function or use of the object made. The maker is impelled by necessity to realize the function of the object made; his method of action is dominated by the adaptation of the thing constructed to use. Such motives are the most easily appreciated, most freely comprehended, are adapted to the lowest orders of mind, and therefore to the most primitive stages of mental action.

Self-preservation.

The necessity for shelter stimulated invention. We can picture the early savage, from the suggestion of overhanging bank or hollow tree, digging a cave with his hands, or tearing off the dry bark for a rude refuge from sun and rain. The necessity for food led to the construction of a sling; the

use of a dry stick suggested the manufacture of a club and a spear; and out of these evolved the still higher compound weapons, the blow-reed and the bow-and-arrow. All these necessities of invention in making demanded exercise of the body, the mind, the will, and were so many steps toward a higher development.

Analysis of making as a mode of expression.

A brief analysis of making may be stated as follows: (1) the arousing of motive by means of necessity; (2) the concentration of thought in an individual concept to be expressed; (3) the steady exercise of the will in continued acts necessary for the externalization of the individual concept; (4) the physical exercise or the use of the whole body in executing the demands of the will; (5) the continual criticism necessary for the exact adaptation of the object to its function. "The slightest change in form, or the slightest lack of the proper adjustment of parts, will," reasons the maker, "destroy or damage the design." The bodily exercise obtained by this complete externalization of individual concepts is of the most marked character. Aside from the motive of obtaining bodily sustenance, the human race, without doubt, owes its physical strength, its powers of endurance, its skill—in fact, that which is necessary as a basis of development—more to the exercise of the body in making than to any other cause.

Making as a means of physical strength.

Making, as a primitive and fundamental mode of growth, is close to the heart of man. Its motive is clear and most distinct; it acts for the preservation of self and the preservation of others. The intellectual action is in the beginning the simplest, most clearly appreciated, and the plainest product of observation and imagination. In fact, making

is the natural beginning and foundation of all the conceptive modes of expression. It is nature's primary method of human growth, laying and building a sure foundation for higher action.

Making, modeling, painting, and drawing may be called the conceptive modes of expression, because individual concepts in each of these modes constitute the bases of the expressive acts. In making, the concept is completely realized in an external object. By the other conceptive modes, the concepts are partially realized. In modeling, the concept is expressed in outward form of three dimensions; in painting, by colors; and in drawing, by lines and shading. Modeling, painting, and drawing are the art modes of expression. Making has for its motive practical use. The design of art is entirely limited to the expression of thought; the individual concept is a mental means or medium of thought expression; the motive and thought are embodied in an individual concept.

Conceptive modes of expression.

Art modes of expression.

Man in the early mythical stage believed that all nature, and indeed all external objects, were animated like himself. He believed that sticks and stones, trees and streams, stars, moon and sun exercised spiritual power over him—power that he must in part possess for his personal weal, else disaster would follow. He believed that the forms of objects embodied invisible spirits; therefore, in his first attempts at art, he endeavored to imprison and command the unseen powers which surrounded and controlled him. A model in clay, a rude paint-daub, to the savage's dawning intelligence, took away the invisible strength of the object. The Thinglets of Alaska carve pictures of power-

Origin of art.

ful animals upon their clubs to endow their blows with corresponding strength. Many savages, to-day, will not allow themselves to be painted or photographed from a fear that the picture will take away their power, or, indeed, kill them outright.

Art and religion.

The claim that art sprang from the myth or elementary religion is a reasonable one. The main function of art expression in the past, and, indeed, up to modern times, from the ugliest idol that ever frightened a poor savage into obedience to the manifestation of redeeming love in the Sistine Madonna, has been the cultivation of fear, reverence, adoration, and love for invisible and divine power. The development and nature of the religions of the past are interpreted more through art than by any other means.

Different uses of art.

The earliest use of profane art, if I may use that term, was the expression of character in individuals; the statues and pictures of statesmen. Then followed the representations of heroic deeds in order to stimulate patriotism, and lastly, the interpretations of nature and natural objects. True art has no other use than the manifestation of the invisible: in religion, divine power and love; in statues and pictures, character; in pictorial descriptions of heroic deeds, patriotism; in paintings from nature, the invisible life and power that animates all and breathes through all.

Hieroglyphics.

Following and perhaps preceding speech, the pictorial mode of thought expression may be numbered among the earliest acquisitions of the race; out of pictorial expression was evolved a system of hieroglyphics, the beginning of writing.

In the relation of art to human evolution, there

must be made the strongest discrimination between intrinsic art and the mere act of imitation or copying. Any imitation of a work of art, such as the modeling of idol or statue, the copying of painting or drawing, is essentially *making;* it is not art expression by any manner of means; it lacks the highest thing that is cultivated in art expression—motive. An Italian marble-cutter may copy the model of a great artist with complete accuracy, may chisel marble with the greatest skill, and never for an instant thrill with thought or emotion kindred to that which moved the soul of the artist; he may, indeed, work long years with the utmost faithfulness, and never have a suspicion, even, of the motive which prompted the creation. Mere imitation of art has no relation to art itself, and no educative influence. Imitation, whatever its kind or quality, is essentially making, minus the best thing in making—motive.

Imitation.

Copying not educative.

In manual training the one motive of making is the function of the thing made; in art the one motive is to give to others a great controlling thought, to embody this thought in an individual concept, and to externalize that concept by skill. The nobler the thought to be expressed, the higher the motive, the greater the striving to make the expression adequate to the thought:

Function of making.

> 'The presence fair
> Of unachieved achievement, the high task,
> The struggling unborn spirit that doth ask
> With irresistible cry for blood and breath,
> Till feeding its great life we sink in death."

The difference is world-wide between the artisan

and the true artist in the reflex action of thought power and skill upon the soul.

There may have been great artists who were educated through the technically accurate imitation of works of art; but, so far as I know, history fails to name one such artist. The modeling of cubes, spheres, and other geometrical forms is not art expression; it is mere making, manifesting no thought except that expressed in the representation of a thoughtless concept. In the modern method of drawing, which consists in general of the imitation of flat copies, there is no art. Indeed, the teachers of such drawing are, sad to say, rarely artists. If they were, they would inspire their pupils to express educative thought—thought acquired by attention and reflection; they would understand better the organic relation between art and the central subjects of study; would see that the study of geography, of myth and of history, furnish countless opportunities for its expression. The teaching of art is in its infancy; when it comes to its own and is used to reinforce and intensify the highest thought of the soul, its pre-eminence as a means of education will be no longer a matter of doubt or question.

Function of art in education.

To summarize: First, the strongest common factor in art is found in motive—the motive of manifesting the highest spiritual power, the complete expression of intrinsic personality. That which controls the being is the desire to make known to others cumulation and climax of thought.

Educative value of conceptive modes of expression.

Second, individual concepts are the mental means of embodying art ideals. Just so far as man manifests his thought to man through qualities of matter, just so far is he a creator; these crea-

tions of the artist finding their intellectual realization in units of elementary ideas, the creations and correspondences of external elementary energies. The individual concept is a means to an end; it is the symbol or medium of thought, and not the intrinsic thought itself. The fatal delusion of art in education lies in the belief that the mere mechanical expression of concepts is art.

Third, in art thought is manifested through partial symbols, or the partial externalization of a complete individual concept. In modeling, the *form* corresponding to the concept is fully expressed, without regard to color; in painting, the expressed form consists of shades and tints of color; drawing is the modeling of form, in two dimensions; making is the complete manifestation of the concept. The external products of the four conceptive modes of expression have *form* in common; the differences consist in the kind and nature of the forms. In making, complete material is used in construction; in modeling, clay or similar plastic material needed to express form; in painting, color alone is used; and in drawing, the material is limited to crayon or pencil.

Partial symbols.

Materials used in art.

The variation in materials used demands an immense difference in mental power, or power of concentrating thought. The thought itself in each mode of art expression is similar, if not identical; *but the less the quantity of material used in realizing thought, the greater must be the concentration of thought.* The thought must be clearer or more distinct, the concept more definite, and the skill or physical exercise of a higher quality. The will, also, must be in more steady and continuous action.

Relation of the different modes of art expression.

Function of art to express thought.

The mere expression of the concept in itself has little to do with art; it is the character, the life, the power expressed by means of this thought embodiment that is the all-controlling motive. The clay, the colors, the shading are means to an end—the means of arousing in those who may observe the work of art certain thoughts and emotions, definite ideas of character, religious, heroic, patriotic. The true landscape-painter reveals more of life and beauty in a landscape than a common observer gets from the real landscape itself. He interprets the hidden beauty and hidden power of nature to others. There would be no reason for art if art did not translate and transcend nature. Art shows things to man which he cannot otherwise see. The true function of art is revelation and inspiration. Works of art have marked the highest spirituality in each stage of human evolution; they rank as the highest interpretation of human life.

Landscape painting.

Individual concept and its relation to forms of expression.

In art an individual concept is a mental means of thought embodiment. In making, as I have already said, the individual concept is fully manifested in the expression; in *modeling*, the form corresponding to the individual concept expresses the thought. Plastic materials, like clay and wax, are used as the material for thought manifestation, and form is the result. Through form invisible character is manifested. Next to making, modeling is the nearest adequate mode of expression; for form is the highest manifestation of energy. The physical training induced by modeling is the development of the tactual sense. Recalling the discussion of the place the sense of touch holds in its relations to intellectual power, it will be seen

that there is no possible training of the tactual sense that equals this means of expressing thought.

In painting, however, the medium of thought expression is color; that is, the expressed thought corresponds to the individual concept in colors alone. By painting I here mean the expression of thought by colors aside from drawing. Next to modeling, probably painting was the primitive mode of expression. Color is the great representative sense; it represents form by shades and tints.

Sequence of the three art modes.

It seems to me that we find in these four conceptive modes of expression a beautiful sequence in the means of thought evolution: when the concept is weak, and the being undeveloped, the means of thought manifestation must be the greatest. This condition is found in the materials for making; the next step in lessening materials is in modeling; still less, in painting; and least of all, in drawing. The hypothesis which I believe to be a sound one is, that the less material used the stronger must be the motive, the more concentrated the thought, and the more continuous and more powerful the influence in acts of expression. Making is the simplest stage; modeling stands next in order; painting, the next; and drawing is the highest of the conceptive modes. All the conceptive modes are related to each other by the common bond of individual concepts.

Physical culture in art expression.

Fourth, the physical training in art expression is of the highest and most delicate quality. It can all be comprehended in the word grace. Adequate skill in the manifestation of thought is the most exalted function of the human body. Skill is wholly acquired by exercise in thought expres-

sion. The nature of the conscious activities to be expressed determines the quality of the skill. In the striving of the soul to make the expression adequate to the thought lies the highest possible and most educative exercise of skill.

Making requires the exercise of all grades of physical strength; the art modes demand the finest delicacy of touch. Modeling exercises the greatest intellectual sense—touch—in an incomparable way; painting requires still finer handling; and drawing, the most skilful exercise of muscular power. Grace is diffused strength, diffused from a physical centre of strength; the greater the central physical power, the greater the possibilities of delicate touch at the extremities. Delsarte's principle may be applied here: "Strength at the centre, freedom at the surface, is the true condition of being." The exquisite touch of the artist is applied grace, applied in enduring gesture. Grace requires the co-ordinated action of the whole body —the entire energy of the being acting in harmony—thrown into one act.

Grace.

Educative use.

We can trace in the conceptive modes of expression a natural and indispensable sequence of human evolution—a harmonious evolution of the mind, body and soul. Can we answer the question, "Could one of these modes of expression have been omitted without loss to the development of character?"

Relation of art modes of expression of speech.

The particular educative use of the art modes of expression is the concentration and idealization of thought; the expression of the most exalted states of the soul in the most defined way, appealing directly to all that is in other souls. Art is the concentration, speech the expansion, of thought;

one limits, the other extends. In speech not only concepts, but judgments, sequences of reasoning, generalizations, classifications, are expressed. The intimate relation of the art modes to speech is obvious: art tends to concentrate thought in speech, keeping it from diffuseness and dissipation.

Speech.

I have already presented in the talk upon hearing-language a brief analysis of speech. Speech is articulate voice, which no doubt was evolved from voice itself. All inflections, accents, including emphasis, are qualities of voice, and accompaniments to articulate voice. Speech is articulate voice, the skilful cutting or manipulation of qualities or elements combined, and associated in the pronunciation of words. Pronunciation consists of enunciation of distinct sounds, and the articulation of these sounds into words. Each enunciated sound in the oral language is a quality of voice made by the breath as it passes through the vocal cavity. The distinct shape of the vocal cavity determines the sound made. I shall not here attempt to discuss the very interesting and still somewhat obscure subject of the evolution of human speech. Like every other product of the mind of man, it began in exceeding crudeness. The "bow-wow" theory is ridiculed, still it holds a prominent place with many philologists as one beginning of speech, at least.

Speech defined.

Language.

I have called the language of a people the ethnographic body of a composite soul. Words are pure symbols; they have no correspondence whatever to the thought expressed, unless we accept a few words that retain suggestions of onomatopœia. The individual finds a language ready-made for his adoption and mastery. Oral words are func-

tioned by hearing-language, and speech by exercise in pronunciation and syntax. Inflections,—other than accent,—emphasis, harmony, and melody, are spontaneous qualities of voice.

Acquisition and mastery of speech is the most common, and, at the same time, the most marvelous product of human energy. The mechanical obstacles to be surmounted exceed in difficulty any and all the other forms of thought manifestation.

Obstacles to be overcome in learning to speak.

Each sound demands a definite position of the vocal cavity ; each successively uttered sound requires a readjustment of this cavity. The articulation of an oral word demands a corresponding concept of that word—its sounds, articulation, and accent.

Expression of thought through sentences requires a knowledge of the arrangement and relation of the words—a command of syntax; the most difficult factor in speech being the idiomatic arrangement of words.

Imitation.

The mechanism of speech is wholly a product of imitation ; not the imitation of the movements of the vocal organs, for a child cannot observe them, but the imitation of elements in words, and the units of words in sentences. The acquisition of speech requires an immense amount of mechanical practice, but this incessant practice takes place, beginning with spontaneous, preliminary babblings, under the immediate impulse or desire to express thought. The indomitable energy that springs continuously from the ever-impelling desire to express thought, carries the little learner triumphantly over all the tremendous obstacles—tremendous in analysis—which lie in his path.

Speech has one predominant advantage over all

the other modes of expression, with the exception of gesture, and that is *the continuous and countless demands for practice.* "Uebung macht den Meister," say the Germans. If other modes of expression, making and drawing, for instance, had as many demands and opportunities for exercise as speech, the skill in these modes would be as great, if not greater, than in oral language.

Countless opportunities for exercise.

The speech of a child ever conforms to his thought power; words and sentences, subjects, predicates, and modifiers in all their varied forms and relations, simple and complex, spring directly from the exact nature of the conscious activities to be manifested. No word or sentence is ever learned solely for *future* use; step by step, language is acquired with thought and for thought. Any attempt of a mother to lay up in her child's mind a stock of language-forms for use, when perchance the fitting thought should come, would be disastrous.

Spontaneous acquisition of grammar.

As the language of a people is the positive indication of growth and stage of growth, so the language of an individual is a distinctive mark of culture. By this is not meant accuracy and polish of speech, but its power as a medium of thought expression. The motive of speech is the immediate conveyance of thought to others; the controlling impulse is to move others to a complete understanding of one's thought.

Language a mark of individual growth.

Back of articulate voice which is strictly mechanical or artificial, impelling, enforcing, explaining, and emphasizing, lies voice itself, with its qualities of rhythmic inflection or melody, its unity of inflection or harmony, its major inflection or emphasis. Accompanying speech is gesture, or

pantomimic movements of the body, emphasizing, supporting, filling out and supplementing articulate voice. No argument is needed to prove the reflex action and influence of speech upon the whole being, mind, body, and soul.

Influence of speech upon the being.

Writing was the last mode of expression in order of evolution. The phonetic alphabet marked the transition from barbarism to civilization. Writing is an evolution from drawing. Picture-writing, or hieroglyphics, was the first graphic mode of expressing thought. Along the line of economy, hieroglyphics were gradually modified until letters were evolved.

Writing.

The mechanics or forms of expression in penmanship are the simplest and easiest made of all the forms in any mode, being a modification of the simplest lines of gesture. The forms of letters consist of straight lines and simple curves. The physical agents of writing, the hand and the arm, are the most complex and best developed joint-organs of expression, and, as a rule, are the most exercised, being used in all the modes of expression except vocal music and speech. In the conceptive modes, the forms of expression are governed by the concept; in writing, the simple forms of expression are fixed and ever recurring. The making of simple curves and straight lines is a very easy matter, the making of the words correctly, or the spelling, constituting the principal difficulty of writing. To English-speaking children the useless and monstrous incubus of unphonetic spelling is a needless and senseless barrier in the way of education.

Writing the simplest mode of expression.

It is true that wonderful methods and devices for teaching penmanship make this mode of expres-

sion often exceedingly hard to acquire: but here again the difficulties are not in the writing itself, but principally in the abnormal methods and devices used. Of devices for teaching writing, there is no end; and most if not all of them cripple the mind and deform the body. Thank God, the method of teaching children to speak was invented before the schoolmaster appeared!

Devices for teaching penmanship.

The main difficulty in writing is found in the nature of the thought to be expressed. In speech there is an immediate demand for expression, the impulse being quickened by the desire to make the person or persons addressed understand; in writing, this immediate stimulus is lacking. Speech may be fragmentary and disconnected; writing demands connection and relation. Speech may be brief; writing calls for sequence of thought. The motive in speech is immediate understanding; the written page is to be read after the work is done. The speaker watches the effect of his words; the writer must imagine the effect. The motive in writing is, in general, far stronger than that in speech; in the former there must be a steadier and more continuous action of the will in controlling thought power. Speech is strongly enhanced by the attributes of voice; writing stands alone in dead, cold forms.

Thought and writing.

Speech and writing compared.

The controlling motive in writing is that those not present may be reached by the thought expressed. Writing admits corrections and changes; vocalized breath dies on the air, and nothing but its immediate effect remains; writing may remain for ages. Speech and writing mutually enhance the power, each of the other. Speech may be enthusiastic and diffuse; writing, deliberative and con-

Motive in writing

centrated. Speech affects writing by earnestness; writing influences speech by its slower and more cautious mental action. Speech in the main springs from loose or immediate thought; writing, as a rule, demands the closest study and preparation. Far fewer opportunities, as a general thing, present themselves for writing than speech; therefore the latter is much more slowly acquired and less used by the masses. Speech has had a mighty influence in the development of the whole race; writing, of the few. The action of both has developed language.

I have spoken of the relation of the modes of expression to attention and reflection. It may be that I can make my meaning clearer after this brief analysis of the different modes. Expression is essentially *doing;* it is that towards which all human action moves, and, indeed, should move. Expression is ethical action; it should be the application of truth. Expression concentrates and focuses the soul; it reveals personality. The motive that controls attention and reflection is the motive to make others feel, think, and act in accordance with personal ideals. The motive of expression impels the soul to its best effort in observation, study, and reasoning.

Motive in all the modes of expression.

The nine modes of expression have a most powerful influence each upon the others, and all upon each. Gesture, the initial mode, carries its influence over to the conceptive modes, enhances their power, and ever remains an incomparable means of discriminating the more subtle distinctions of thought and feeling. Voice is embryonic speech; its finest qualities are displayed in vocal music. Music, in turn, makes speech beautiful,

Relation of the modes of expression to each other.

and breathes its rhythmic sweetness and power through poetry. The conceptive modes of expression develop concentration of thought; speech and writing expand and broaden thought; the art modes of expression—modeling, painting, and drawing—are the three great steps in the evolution of man.

Froebel's ideal.

The proper and educative exercise of all the modes of expression presents the most vivid illustration of what Froebel meant by the "harmonious development of body, mind, and soul." Expression ever acts to develop motive; it makes the highest demand for thought power, and requires the most healthful exercise of the body. From the standpoint of race evolution each mode has been an essential factor in human advancement. It is hardly possible to imagine the omission of the influence of one mode without serious detriment to progress. Each mode is capable of almost infinite development. From thrumming on two strings to magnificent orchestration, music makes its way; making reaches from the cave to the palace; art from the rude daub, or the frightful idol, to the Venus of Melos.

Relation of the modes of expression to the education of the individual.

From the race we turn to the individual; from general development to personal education. The exercise of all the modes of expression has been and is a necessity in the promotion of civilization. The pertinent question, then, is: Are they an absolute necessity for the complete, rounded, all-sided education of a human being? If all the modes of expression are not now necessary for this purpose, which one, or ones, may be omitted? If all are necessary under the proper conditions of time and means, owing to lack of these conditions,

Can any one of the modes be omitted?

what mode or modes may be dropped? Taking it for granted that the exercise of each mode has developed certain physical powers and capabilities of muscle, nerve, and brain, would not the omission of any one mode weaken the special physical capabilities developed by each particular exercise? Is it economy of time and power to give children who attend school only for a short time, proper exercises in all the modes of expression, for instance, from three to eight years? These questions are of immense importance, not only to the teacher, but to parents. With speech and writing there is no question; they are universally used and believed in. The problem with them is: How may they be used to the best advantage? All the other modes are in doubt, not so much among educators, but with the people at large.

Ideal of the republic.

The ideal of education controls both method and means. A republic can logically hold but one ideal, and that is to make of each individual all that he possibly can be. Any stopping short of this ideal is not possible in the development of a people that shall rule itself. Personal freedom in the sense of personal struggle, in the sense of "working out your own salvation," in the sense of "The truth shall make you free," must from very necessity be the ideal of all who follow the Golden Rule, and find its application in true democracy. The high ideal of personal freedom gained by self-effort includes and comprehends all other and lower ideals—the practical ideals, the bread-and-butter ideals. Citizenship, in the best sense of the word, cannot possibly be attained under any other striving but towards the highest goal. These lower

Personal freedom.

ideals are merely steps on the way to immortality. "Seek ye first the kingdom of God and His righteousness, and all these things shall be added unto you."

Empirical argument for manual training.

Making, or manual training, has done more for the human race than the exercise of any, if not all, of the other modes of expression. It is absolutely indispensable to normal, physical development; it has had a mighty influence upon brain-building; it has cultivated ethics as a basis of all moral growth. Should hand-work be made an organic factor in all education from the kindergarten to the university inclusive?

We may profitably appeal from the theoretical side of this question to the lessons derived from experience and history. It is a well-known and oft-repeated fact that most successful men—bankers, manufacturers, inventors, ministers, lawyers, authors, and statesmen—received their primary education in the shop or on the farm. Our country is full of examples of this kind. Hand-work on the rocky farms of New England has given as much of moral power, sturdy integrity, and indomitable perseverance as have her famous universities. Follow the history of any family, rich or poor, the members of which disdain hand-work for a few generations, and you find steady deterioration. War was once the resource of aristocrats; athletics is now taking its place. Without these substitutes for honest labor, poverty would have its perfect revenge. The erstwhile curse of man, "In the sweat of thy face shalt thou eat bread," becomes, in the light of fuller comprehension, his greatest blessing.

Sound health, a strong body, a persistent will, a

logical mind, are some of the marked results of that manual training which springs from stern necessity. On the other hand, the world is filled with liberally educated incapables—men who have studied much and done little; who have never learned the lessons that lead to success—lessons of responsibility, persistent action, of direct application of effort to real conditions. There are ministers with an immense stock of words and phrases, lawyers without cases, physicians fortunately without patients, teachers helpless before work that requires original thought and invention.

Educated incapables.

Laziness.

Laziness is not the cardinal sin of the world—selfishness occupies that place; but laziness is the negative cause of many evils which degrade and debase mankind. Laziness is an acquirement, a state of mind and body induced by wrong education, or the lack of any. The child is a born worker; activity is the law of his nature; helplessness is the product of too much help. "Alas for the man who has not learned to work," says Channing. The foundation of education consists in training a child to work, to love work, to put the energy of his entire being into work; to do that work which best develops his body, mind, and soul; to do that work most needed for the elevation of mankind.

The child a born worker.

Educative work.

Education is self-effort in the direction of educative work. It is impossible to do all-sided educative work without training in hand-work. Manual training is the most important factor in primary education, and it remains a prominent factor in all education. Contempt for labor is an inheritance and a suggestion from the ruling classes. The mere isolated study of text-books induces and

Study of text-books.

enhances this contempt: the product is legions of men whose sole problem is how to get along without hand-labor. Contempt for labor is in the highest degree dangerous to society and to the cause of democracy. Manual training is designed to cultivate love and respect for hard, persistent work; it cultivates a contempt for human beings, rich or poor, whose main purpose in life is to avoid labor.

In large cities, vast numbers of children have nothing whatever to do—no farm, no workshops; children of poverty run in the street and learn its awful lessons. The apprentice system is a thing of the past; working-men, to-day, generally do one thing: make some one part of a machine. This monotonous work is anything but educative. If a manufactory closes and these laborers are thrown out, they generally are helpless; their trade habits are fixed—they can do nothing else, and they fall a burden to charity or a prey to hunger. Educative, all-round manual training develops the habit and skill for all-sided work; it makes the worker capable of doing new tasks and studying new conditions.

Handwork of to-day.

Manual training has a moral tendency. Vice, intemperance, and crime are the fruitful products of laziness and contempt for hand-work. It may be said that many children have plenty of manual training at home. Then I say, exalt and dignify it; enhance skill by recognizing and emphasizing hand-work in the school-room.

Moral tendency of manual training.

"There is not time for such work when so much desultory spelling and fragmentary arithmetic must be learned." There is time for but one thing, and that is to form habits consistent with the highest type of manhood, and to supply the most pressing

needs of society. The shorter the time a child spends in school, the better the work he should do. Compare the boy who steps from school with the ability to read a little, to cipher fairly well, and to write legibly, but who has never learned to work, with one who has formed habits of work, who has learned to observe, whose curiosity is whetted, who has acquired something of manual dexterity, and is controlled by a deep love for expressing thought with his hands. The boy with the words, number-tables, and penmanship may read himself to ruin, write himself to Canada, or cipher himself to perdition; while the boy who loves work and knows how to work will be apt to educate himself, and at the same time give society the benefit of a life of hard and useful labor.

Reading, writing, and arithmetic.

There is really no conflict between manual training and the so-called fundamental studies. The energy and vigor, moral, mental, and physical, acquired in manual training, may be carried into all studies. Education is not so much a matter of time as of quality. In manual training there are the best lessons imaginable in form, geometry, and practical arithmetic. Manual training is primary logic, so much needed in speech and writing. Manual training trains the will by persistent effort, stimulates the critical faculty, and, above all, develops ethical motive.

Relation of manual training to other studies.

The reason why manual training makes its way so slowly in our school-rooms is plainly that many teachers have spent their precious time in preparation for verbal examination, and therefore have never been trained to skilled habits of hand-work.

In regard to the art modes of expression, I have already suggested the arguments. On the prac-

tical side, there is much to say in favor of modeling, painting, and drawing. There is never a day in a useful man's life when the skill, taste, and critical power acquired by the exercise of one or all of these modes is not called into practical use. There is no trade, business, or profession in which the mental or physical results of art, skill, and study do not essentially and practically assist. What are distinct concepts of color, form, symmetry, proportion, to the carpenter, architect, designer, shoemaker, tailor, dressmaker, gardener,—in fact, to every namable trade in this world that is useful? Reading, writing, and arithmetic are called the tools of learning; but educative practice in art is *learning itself.*

Should the art modes of expression be taught in the common schools?

Vocation.

Mistaken vocation is one of the saddest results of mistaken education; there is always ideally some vocation for which a person is best adapted. To find that calling is blessedness; to mistake it is misery. Education should be the unmistakable guide to vocation. There is many a minister who could pound hot iron on an anvil to far better effect than he pounds the pulpit-cushions; and there is many a sturdy blacksmith who could make an audience thrill with love to God and man, if he had found his way to the pulpit. Countless young men leave the free life of the farm to become counter-jumpers and writing-clerks. Education turned their eyes away from the possibilities of the soil and the advantages of hand-work, and fixed them upon the city as the land of promise. Education with low ideals has, like gazing at a nickel, a hypnotic effect upon its victims. The varied yet unified work which the proper exercise in each and all the modes of ex-

pression gives will have a strong tendency to lead the worker to the right vocation—that vocation in which he will be of the greatest use to the world.

Modes of expression as a means of character study.

Through expression, the teacher studies the pupil, his thought, emotions, will-power, special aptitudes and controlling motive. Verbal memorizing offers very meagre opportunities for this extremely instructive study—a study which directs adaptation to individual needs. Exercise in all the modes of expression opens the child's soul to the fullest and freest inspection—an inspection to a keen-sighted teacher which leads to correct judgment and the most useful adaptation of means.

We must conclude that the use of all the modes of expression is an imperative necessity in all-sided growth, in the realization of the highest possibilities of manhood and character.

Conclusion.

The reasons for this conclusion may be summed up as follows: First, true education makes a human being of the greatest possible use and benefit to mankind. The central-point and sole purpose of education is to make the highest motive a fixed habit. Motive is cultivated by righteous action. "He that doeth righteousness is righteous." All righteous action culminates in expression. Skill in each motive gives a person greater power to do good. Ethical training consists in doing the right thing in the right way under the right motive. Expression is the supreme means of developing motive, and motive determines the right method.

Second, the intellectual effect of acts of attention is to intensify the action of consciousness—indeed, all the power of the mind. Each mode of expression has an especial and indispensable

function in intensifying thought. I have discussed the relation of thought intensity to intellectual strength. It may be that there is a better word—I have not found it. I have characterized thought intensity, given an educative subject, as the highest moment of educative action. The demand for expression is a demand for attention or reflection, or both. The central subjects of study present the conditions for study; the different modes the conditions for the expression of the thought thus acquired. All subjects of expression may be limited to the study of the central subjects; taking anything outside of that wide range is unnecessary, and a waste of time. All acts of expression condition a study of either color or form, and include most, if not all, of the attributes of externality.

Third, physical training has for its sole end and aim the development of the body as the most perfect possible instrument of attention, reflection, and expression. There is not, neither can there be, any physical training comparable to physical exercise in acts of expression under all the modes. Steady exercise in one mode limits and narrows physical power rather than extends it; the exercise of each and every mode of expression brings into full play all physical agents,—thus the conditions and adjustments of certain muscles are enhanced by the healthy exercise of the whole body. Speech and vocal music exercise the lungs and the internal organs of the body; making cultivates physical strength, art studies grace and beauty of motion. Physical training, *per se*, is indispensable to education; its purpose is exactly the same as physical exercise in acts of expression; but physical training for the most part is a substitute for that

exercise which might be had by the proper, sufficient, and practical use of all the agents of expression. On the practical side, the exercise of all the modes of expression prepares man to be of the greatest benefit to mankind.

Pedagogical value of the modes of expression.

The pedagogical value of training in all the modes of expression may be briefly stated:

(1) The child's individual concepts are very simple and crude; it has no complex concepts.

(2) The fundamental use of exercise in all the modes of expression is to intensify those individual concepts upon which analysis, comparison, classifications, original inferences, and generalizations depend.

(3) Concepts are developed very slowly. The demand for expression should be adapted to the growth of concepts. Any attempt beyond this limit cripples mental action.

(4) *The difficulties of technique or skill are very much overestimated.* The reason for this overrating is that attempts are commonly made to make forms of expression without adequate motive and unimpelled by thought, forms that have no thought correspondence.

(5) If, in the studies of the central subjects, all the modes of expression are continually and skilfully used to intensify thought, every child would acquire proficiency in modeling, painting, and drawing.

XI.

UNITY OF EXPRESSIVE ACTS.

Economy of energy.

Economy of energy is the method of evolution in matter and life; economy is the distinctive mark of all progress. The highest outcome of invention, machinery, discoveries in science, is the utilization of force. The process of education consists in economizing personal energy; it means using to the greatest advantage, and with the slightest possible expenditure of power, the whole being,—body, mind, and soul. Economy of personal energy is freedom, and freedom is conformity or obedience to God's laws. Personal liberty is self-effort unrestricted by anything but the laws of being. Strict obedience to law is the highest economy of self-effort. Every human being is endowed with a definite amount of energy, determined by the physical organism; the problem of education is, How may that energy be used for the full realization of possibilities?

Freedom.

Self-effort.

In education the being moves to higher planes of thought and action, by sinking lower planes into the automatic; consequently a useless expenditure of energy upon lower planes obstructs normal upward movement. Over-effort and useless striving keep the mind too long in one stage of development, and cripple its action in higher stages. Education is the economy of self-effort; in the strongest and most effective action conforming to law, there is the greatest economy. We

Over-effort.

seek for the supreme rule of self-effort, and we find it in *unity of action*,—the culmination of economy.

Unity of action.

Unity of action in attention.

I have already spoken of unity of action in attention; but this law has a far higher application in acts of expression: higher because the end and aim of human life is expression.

Unity of action defined.

Functioning of the whole being.

By unity of action in expression is meant the functioning or use of the whole being in one act of thought manifestation; that motive, conscious activities, physical action, and external form shall follow each other in immediate and uninterrupted succession; that from motive to form, impulse shall follow impulse without the slightest break or pause; that the agent or medium of expression shall not absorb the attention of the ego; that consciousness shall not be divided; and that the body shall act simply as the agent, medium, or instrument of expression. It is the part of *teaching* to present educative conditions for effective acts of consciousness needed for the highest self-effort. *Training* consists in presenting the best conditions for the development of the body as a medium or agent of attention and thought expression.

Teaching defined.

Training.

Skill.

Perfect skill is the adequate manifestation of the soul. The training of the body has for its purpose the complete domination of the body by the *ego;* when this control of the body is normal, its reactive influence upon the mind is healthy, rational, and effective. The perfection of skill consists in the precise, immediate, and automatic response of the body to the mind; any failure in such response requires undue effort to overcome obstacles in the agent, and renders the act par-

Reaction of expression.

tially or wholly abortive. In unity of action, the *particular* agent of expression never acts isolated and alone; it is reinforced and energized by the entire organism, under the direct and full command of the *ego.* **Isolated action.**

Grace is the product or the outcome of physical and mental strength. It has its source in the depths of being; it diffuses itself through the extremities and is manifested in lines of beauty and power. The elements of grace are ease, precision, and equilibrium. Ease is the greatest economy of physical action consistent with the most effective expression; precision is exactness and accuracy in skill; equilibrium is the diffusion of that energy which conduces most strongly to the enhancement of a particular act of expression. Ease, precision, and balance make adequate skill possible. They are the physical conditions under which the ego is enabled to concentrate or throw all its energy through the agent functioning the thought, thus economizing to the full, self-effort. Restriction, tension, or effort to act renders poise impossible, and is indicated by the absence of grace, or awkwardness. **Grace.** **Elements of grace.** **Ease.** **Precision.** **Restriction and tension.**

Illustrations of the beautiful law of ease and equilibrium are abundant. Some of them may be given: **Illustrations of the law of ease and equilibrium.**

(1) Self-poise in danger is the infallible sign of courage, enabling one to reflect with lightning-like rapidity, and to throw energy where it is most needed. **Courage.**

(2) The more easily the rifle rests upon the arm or is held in the hand, the better the aim. The same fact is true in the use of all tools and instruments. **The rifle.**

Ploughman. (3) The ploughman in a stumpy field lets the plough handles roll in his hands in order to meet shocks and control the implement most effectively. If he tries to *hold* the plough itself, his strength is quickly exhausted.

The mower. (4) The first lesson a mower must learn is to hold the snath nibs with the least possible pressure; undue pressure reacts, and weakens the centre of strength.

The blacksmith. (5) The blacksmith swings a heavy sledge

"With measured beats and slow."

He holds the hammer handle loosely in his hands, and is thus able at the exact moment to concentrate energy.

The woodchopper and penman. The illustrations in this direction are innumerable and universal; the woodchopper swings his axe with the slightest muscular tension; the skilful driver holds the reins with the least possible exertion; the skilful penman lets the holder *rest* in his hands; in walking, the whole body must be mobile and elastic. Untrained, awkward novices in hand-work are generally lacking in harmonious action, and waste a vast amount of energy in over-

Overstraining. straining and exhaustive muscular tension.

Grace and awkwardness. Grace is the product of unity in continuous acts of expression; awkwardness results from broken unity. It is not possible to secure true grace by mere physical exercise or training; grace has its source in the soul, and must spring from that

Order of development. centre. The order of succession in development is first equilibrium, then ease, and last precision.

Equilibrium. Equilibrium is the indispensable condition of ease, and ease of precision. Rhythm is the harmony of ease, balance, and precision. If habits of precision

are made the initial steps in training, they must be broken down before there can be any successful cultivation of grace. The thoroughly trained soldier is an example. A Prussian officer is generally a perfect illustration of trained precision,—stiff, ungainly, and abnormally precise,—a machine rather than a man. Precision aims at training the extremities, the limbs, legs, arms, hands, and head. Delsarte's statement of expressive power is: "Strength at the centre, freedom at the surface, is the true condition of being." External grace or power is a product of the whole. From brain to spinal cord, physical power by proper exercise is gradually diffused over the whole body, reaching the efficient agents of expression last. Attempt to train the extremities—the fingers, for instance—before there is due strength at the centre, and the result is a knotting and a tension of muscles that compress efferent nerve-tracts. The inevitable result is the obstruction of free action from the centre, and the body is thus weakened by abnormal reaction. A person who learns to write by the finger movement must overcome a fixed, unnatural habit, must "decompose" knotted muscles before he can ever make a *smooth line*, the infallible indication of ease.

The trained soldier.

Delsarte.

Diffusion of strength.

Danger of training the extremities first.

Precision as preliminary training, isolates agents of expression, cuts them off from the reinforcing action of the whole body. We have seen trained (?) singers who used the organs of voice alone and isolated, and penmen who wrote with cramped fingers. The imperative rule for an adequate act of expression is that the whole body, every muscle and fibre, is concentred upon the act; a person should sing, write, speak, by means of the freest

Isolation of agents.

action of the entire physical organism. When agents are isolated by premature attempts at precision before poise and ease of body become habitual, the inevitable knotting and tension of muscles react, cripple the body, and constrain the mind.

Genuineness.

One marked indication of unity of action in expression is *genuineness:* in genuineness, the forms of thought manifestation are recognized as the direct reflex of the mind; no matter how crude the expression may be, there is not a superfluous word, a line too many; there is no waste of breath, ink, clay, or paint; words are used to reveal, not to conceal, thought. Genuineness means a transparent, truthful soul, and a body through which the soul shines.

Children illustrate genuineness.

Voices of children.

Little unspoiled children are the best illustrations of unity of action. Listen to children's voices while at play,—perfect melody, harmony, emphasis, and inflection, the pulsations of their joyous souls. Watch their movements in walking, running, skipping, hopping, and dancing; their gestures are in broad lines, full of unconscious grace. The agents of expression and locomotion are harmoniously adjusted and co-ordinated. Indeed, that which the child acquires spontaneously and instinctively, the orator seeks to acquire by long and arduous training. The best of our orators, under the impulse of a dominating motive, have the ease and power of expression that is characteristic of childhood. This spontaneity was the great charm of Wendell Phillips. I have seen him stand upon the platform with perfect poise and perfect ease, every muscle flexible, mobile, under absolute control, and still the whole being so abandoned to

The orator.

Wendell Phillips.

thought and feeling that the throbbing of his great heart, instinct with an all-controlling motive, found instant and complete expression.

The actor.

The actor as well as the orator strives for this same unity of action on the part of body, mind, and soul. Indeed, many seek for this, the perfection of art, "but few there be that find it." "The highest art is to conceal art," and among actors Salvini may be cited as a nearly perfect exemplification.

Salvini.

Illustrations of unity of action.

A person under a strong impulse to do a brave and courageous deed will suddenly acquire this unity of action. The cry of fire is heard: the brave man forgets himself, he acts under the highest impulse, using his powers to the greatest advantage. The untried soldier marching to battle often presents the very opposite. He is dominated by fear; his soul seems separated from his body, and his thought is riveted upon the danger which will come in deadly wounds or immediate death. But if this terrible fear is overcome, as it will be if the soldier marches straight ahead, then comes the soul again, the full command of the body, and heroic, almost superhuman deeds are the result; death is nothing, victory is everything.

The school that could write beautifully.

One can present far too many illustrations of broken or impaired unity of action. I once knew a school that was famous all over New England for its so-called copperplate writing. The children spent much time during six years in making the forms of writing. Their motive and their intellectual action were absorbed in one purpose—that of making painfully accurate forms, slowly drawing these forms by elements, principles, single letters, words, and meaningless sentences; and in this they really had succeeded.

Their writing was the wonder and admiration of all who saw it. A devotee of that plan myself, I proposed to test its efficacy still farther. I read to the pupils of the eighth grade a simple, interesting little story of about one page, gave them paper, and then asked them to tell the story, themselves, in writing. The result was disastrous: the writing was nearly illegible, and the spelling wretched; in fact, the whole execution was disheartening to any teacher who had toiled and moiled for long years to train pupils to make these so-called beautiful forms. The reason for this terrible waste of energy is not far to seek. There had been no unity of action on the part of the pupils, and when that was required it was not forthcoming. The teaching had violated the first principles of Mother Nature, under whose skilful training the children had been from the first babble to the mastery of the common idioms of the language. *Writing had never been used as a medium of thought expression.*

Could not express thought.

Nature's training.

Experience brings home the crippling effects of broken unity. Too often the end and aim of oral reading is the perfunctory calling or pronouncing of words, to which is often added an arbitrary, unnatural, and worse than worthless emphasis. In the very tones of the child's voice, in its unnaturalness and artificiality, the wide departure from the normal is apparent to all teachers who love genuineness. The child's whole being is absorbed in the pronunciation of words, and poverty of thought and imagination is the result.

Oral reading.

This broken unity, so fatal to education, reaches its climax and culmination in many of our so-called lessons in elocution, in which enunciation,

Broken unity.

emphasis, pauses, pitch, stress, and all the countless contrivances and devices to depress and distress the souls of children are unmercifully used. To add to this misery, gestures are taught! Heaven save the mark! A "made" gesture is a frightful caricature of thought. It is enough to make Delsarte turn in his grave to hear his name used in connection with such ignorant, unpedagogical teaching. A child never makes the slightest mistake in emphasis or gesture until he is taught to do so. Emphasis is the spontaneous discrimination of thought; thought emphasizes itself.

A made gesture.

Delsarte.

The verbal recitation of memorized words and pages is another extremely successful device to break down and destroy unity of action; and when this dull drudgery is stimulated to the highest degree by fear of punishment or hope of reward, its destructive influence is most complete. The entire being is concentrated upon the physical exertion of pronouncing and repeating words recalled from an otherwise barren mind. A student who has had twelve or more years of this process, wasting energy in this terribly extravagant way, has little power to relate words to thought. Ask him a question, and if perchance it falls within his verbal horizon, he fishes it out; otherwise, he is helpless. This is true in a marked degree of students who have been eminently successful as word memorizers.

Verbal recitation.

The normal, healthy action of mind and body is damaged, often irretrievably, by concentrating attention and effort upon the acquisition of forms of expression, without relation to thought. A brief and partial list of the devices for dead-form

A list of means to break unity of action.

learning, selected from a much larger list, may come in place here:

(1) The alphabet, phonic, and phonetic methods applied pure and simple, with the least possible regard for thought.

(2) Penmanship acquired by drawing elements, principles, letters, words and sentences, followed by long and painful exercises in copy-books.

(3) Flat copy drawing,—or better, imitating with painstaking accuracy meaningless forms made by machines upon paper.

(4) Modeling spheres and cubes without adequate motive.

(5) Oral reading which consists in pronouncing words with the addenda of artificial and false emphasis.

(6) Formal exercises in elocution, of pitch, quality, emphasis. Dramatic expression taught through affected gesture and poses given to music.

(7) Learning verbatim number tables, and "doing sums" disassociated from activities which demand judgment and reason.

(8) Page learning and word repetitions disassociated from thought.

Psychological explanation of broken unity.

The brain is the organ of the mind; every mental act must have a corresponding physical act or action of the central ganglion. Although the theory of specific functioning of the brain has not been satisfactorily demonstrated, still all psychologists practically agree that there is a prominent tract or portion of the brain devoted to motor or expressive energy. This tract is the medium through which the *ego* manifests forms of thought. There is another still more prominent portion of the brain, the so-called gray matter, whose func-

tion is to assist in the evolution of intrinsic thought,—to concept-forming, recognition, analysis, comparison, classification, generalization, and all the processes of reasoning. These two portions of the brain are closely and strongly joined together by commissural fibres. If, then, the motive tract is used as a medium of form making, with no organic relation to the cortex or gray matter, the commissural fibres will lack adequate exercise, and therefore be deficient in development; they will remain weak and practically useless, and partial atrophy will be the result. When a good stock of forms for expression has been acquired, any attempt to force thought through the forms by means of these delicate unused tracts, the connecting fibres, is well-nigh impossible.

Why pupils who wrote so well could not express thought by writing.

The pupils to whom I have alluded as models of acquired skill in word-form drawing were called upon to think a little, and force the thought over unused and therefore unrelated nerve-tracts. The beautiful (?) word forms vanished like the mists of the morning, spelling acquired by years of practice failed to rise above the plane of consciousness, and the undesirable result was but an added proof that unity of action must be preserved in all acts of expression, else time and energy is wasted in an unnatural and useless struggle. The conclusion is inevitably forced upon us, that forms of thought expression, or skill, can only be economically acquired by the united action of the whole being; and that intrinsic thought must be the impulse, the controller of the agents, and the true basis of form in criticism.

Self-consciousness.

Self-consciousness is the sad result of making forms for forms' sake. I do not use the term self-

consciousness in a strictly psychological, but rather in a popular sense. True consciousness of self which leads to self-confidence and a proper self-assertion, is the antipodes of self-consciousness in its popular meaning: the latter either utterly damages and destroys confidence of self, or leads to the equally undesirable emotion of self-conceit. *Self-consciousness, so-called, is the partial or complete absorption of mental energy in attention to the physical agents and forms of expression in attempted acts of thought manifestation.* A "made" gesture is a striking illustration of self-consciousness,—a speaker watching the movement of his arm in the air. The orator who listens to his own voice and admires it, has an audience that listens to empty sounds. Screaming, yelling, and bellowing in public speaking are means to calm the fears of a speaker, all too conscious of himself. Pronounced rhythm or sing-song is a rut into which a sacred orator glides, to keep himself from "going to pieces." Affectations of all kinds—lisping, drawling, overstraining, and the like—all spring from an over-attention to agents of expression. Cant and hypocrisy lead to fixed facial grimaces, habitual attitudes and bearings, constant muscular tension, the outcome of effort which strives to impress the "truth of a lie."

Self-consciousness defined.

Pedantry.

All the physical features and traits of pedantry spring from an overpowering desire to impress others with a belief in one's profound erudition and intellectual superiority; many men are marked and scarred all over by steadfast and continuous efforts to bear silent witness to others of personal piety or unlimited wisdom. The distinctive indication of this is precision of muscle; fixedness and

habitual tension of the whole body devoid of grace, and expressive of a soul devoid of harmony. Such pedants too often find a ready market for their wares; the world is apt to take men at their own valuation, letting the men who think and doubt,—doubt because they think—wait for centuries.

Cultivation of self-consciousness.

Self-consciousness is very easily cultivated. A little girl comes in; her voice is music, her movements poetry, her body responds to her soul like the strings of a harp to an artist's touch. Some thoughtless person exclaims, "Oh, what a lovely girl! What an exquisite voice!" The sharp little one hears, alas! and understands. "I am lovely, I am lovely," rings in her ears and sinks into her soul. The reaction is over-attention to body: she listens to her own voice; she watches her own motions; unity of action is destroyed; self-consciousness, affectation, cant, and awkwardness mark the awful transition. A boy, owing to his divine nature or unconscious growth, does some genuinely good deed. "What a good boy!" is his reward. "I am a good boy; if I do good, people will notice and praise me; I'll do good for approbation." Genuine goodness moves out, and pious cant, in.

Flattery.

Public declamation.

Public declamation by little children is another fearful cause of self-consciousness. A person of taste who has had the misfortune to hear "Curfew shall not ring to-night," knows the effect of self-consciousness in its most aggravated form. Too early public declamation has given to the world some frightful specimens as orators, and deprived it of countless good ones. I know a highly educated man of noble heart, whose soul is full of human

kindness, but whose manner and conversation is often brusque and even coarse; the secret of this manner is timidity. We often deem a loud-voiced public speaker self-conceited: too often he is struggling with self-consciousness, striving to drown his fears in billowy waves of sound.

Fear.

Why should it not be as easy to speak in public as in private? The answer is "Fear!" We think of the attitude of our bodies when we stand, are painfully conscious of the forms of speech; attend to the expression alone, until we repress, paralyze, and stultify all freedom of action. An otherwise graceful person may be overcome with fear on entering the presence of some person of exalted position. The moment the room is entered attention is entirely directed to personal appearance; how the hands shall be used; how the head shall be carried; the tongue loses its cunning; the feet refuse to move; in short, body, mind, and soul are paralyzed. I suppose there is no one who has not at some period in his lifetime experienced this woful lack of dignity, this quailing of the soul before some bugbear of the imagination. The moving, despairing reason why prayer-meetings are often so utterly dull and stupid, why many teachers' meetings are fruitless and flat, is that the brethren painfully strive to formulate thought, fail, and decide to let others do the speaking.

False modesty.

"We are modest, we are! Let bolder ones speak; we will sit still." "Do not deceive yourselves, my brothers: it is *pride*, not modesty, that controls you. You fear that you will make a mistake, and therefore *you are modest*."

The evil effects of self-consciousness may be particularized: the most common effect is an abnormal

fear before expressive acts that are in themselves exceedingly simple, a fear which induces temporary constraint of body, and inhibition of mind. We are all more or less victims of this form of self-consciousness; illustrations are not far to seek. Did you ever go to the blackboard to write a word, — *received*, for instance, — and suddenly doubt whether the form is *ei* or *ie*? Have you ever taken a written examination upon which much depended? Have you ever for a moment forgotten all that you ever knew? Did you ever come before a person in authority and wish to explain something of great importance to yourself, and have your tongue cleave to the roof of your mouth? Were you ever suddenly asked a question in company which your very anxiety to answer prevented your answering? Were you ever asked the name of a person whom you knew intimately, and however you might struggle to recall it, the name refused to come? Were you ever speaking in public, and all at once wonder if you were making a favorable impression? Did you ever sit down to write a composition?

Illustrations of unnecessary fear.

Most stammering, stuttering, and hesitations of all kinds are results of an over-attention to forms of speech; there is also a stammering of the mind from the same cause. Self-consciousness breaks the connection between will and action; constant repetitions result in lack of control of the hand or vocal organs, and induce an unnatural habit of action; attention is entangled in the functioning; the difficulty of making the required forms constrains the mind, and fear, the most perilous of all the emotions, not only hampers and hinders expression, but through continual failure lessens activity and renders our best efforts abortive; in

Fear constraining the mind.

short, "makes cowards of us all." We do not dare to read aloud, to speak or sing in public; we shrink from writing and drawing because thought of such action suggests mistakes and failure; the form of the thought is ever before us, a terrifying spectre. Fear that is a direct product of self-consciousness obstructs growth, and diminishes personal influence.

Self-conceit.

A still worse outcome of self-consciousness is *self-conceit.* There is a certain and common type of mind sparsely endowed with original talent, that has, as a poor substitute, great facility in memorizing and repeating words; the rule is that persons possessing this power can recite better unimpeded by any shadow or shade of thought. Such verbal wonders are the comfort, delight, and consolation of teachers whose ideal is *quantity* of knowledge. No danger of failure in recitations, of page and chapter examinations with such pupils: *they* "never stop to think." Their empty heads are wreathed around with a halo of approbation, their hearts are filled with flattery; but they find their fatal mistake when the stern problems of active life, business and real work crowd them into obscure corners. Fear may be overcome by persistent effort, for fear is backed by conscience; but self-conceit well-nigh seals the doom of its victims.

Successful men who were dull boys.

It is hard to reconcile the demands of some of our schools with the demands of life. Many of the most successful men in real life, it is well known, were looked down upon as hopeless dullards in school, frowned on by the teachers, driven out by per-cent examinations, and mourned over by loving parents. Such boys are called stupid or worse, because a divine instinct prevents them

from trying to learn words and "do sums" which to them are meaningless. Blessed are geniuses who find the thought in everything, no matter how much "the method" stands in the way!

Sissy Jupe and Bitzer.

The child who can repeat words like the boy Bitzer, the one who triumphed over Sissy Jupe in the contest for the definition of a horse, *feels that he is already a scholar*. Sissy Jupe had a real definition of a horse in her mind, gained by close observation; but Gradgrind, like many of his countless spiritual brethren, was after a certain definite form, which to his mind was the thing to be learned and repeated. The boy knew nothing whatever about a horse, and yet he met the highest approbation of the school board, and felt that the road to success was open to him, while Sissy Jupe was in despair.

The great transgression.

"Keep back thy servant from *presumptuous* sins; let them not have dominion over me: then shall I be innocent of the *great transgression*."

Prizes.

Too many prizes, rewards, and high per-cents, alas! are given for this mind-stupefying work. Practice in each and every mode of expression is too often made the means of developing self-consciousness,—that self-consciousness which is the greatest obstruction to human development, and its fearful products of fear, or self-conceit.

Flat-copy drawing.

Long years of flat-copy drawing will sink the mind into dead forms, effectually destroying the influence of art expression. In music, many a child with wonderful natural ability, so-called, is put into formal training; and out of millions of such students we get one Materna, with now and then a Mario; the remainder sinking into "innoc-

uous desuetude," victims of ignorance on the part of parents and teachers.

Overburdening.

The subject of overburdening has been much discussed of late. Students, we are told, break down with overwork; ambitious girls suffer from nervous prostration; indeed, until physical training came to the rescue, few young women left high school or college without symptoms of disease, the premonitions of an early death, or lifelong invalidism. Genuine educative work is the healthiest exercise, both for mind and body, of which the human being is capable; the power of endurance in unity of action is simply marvelous. All-sided educative work stimulates the healthful action of brain, nerve, and muscle. The laws of compensation, of interaction and reflex action, of co-ordination and adjustment, bring about a constant refreshment, building up the physical agencies of the mind, that would otherwise be weakened through one-sided or partial action. The prolific cause of overburdening is not genuine work, but mental drudgery; one-sided and partial action of the being, in which there is no continual well-spring of joy in the discovery and expression of truth. Excited by the glittering baubles of reward, of per-cents, place in class, of victory over others, ambitious students struggle for the mastery of dead forms until nerve-power is exhausted, sympathetic organs fail in their functions, and the muscular system collapses. "Oh, what a fine scholar she is!" means too often how rapidly she is using up nerve-force and exhausting vital energies. Motive, too, sinks to the lowest plane in this senseless and selfish striving for rewards and approving smiles.

Educative work healthy.

Overburdening caused by mental drudgery.

Self-consciousness a disease.

Self-consciousness is an incipient disease. An

expert physician will tell you that the continual attention of the mind directed to the body and its organs leads to a change in these organs, to morbidness, to the inhibition of healthy action. Awkwardness, stiffness, cant, affectation, and such abnormal manifestations, are simply indications of that which, if the processes which lead to undue consciousness of self are continued, will be followed by results of the most serious nature,—may lead even to insanity.

I believe that I have not overstated the dreadful consequences of self-consciousness. The question is, whether this unity of action, begun spontaneously and instinctively in childhood, this marvelous power which is sought for by all artists, this genius, this centering of self, cannot be continued to the end; whether all expression may not be under the immediate impulse of thought controlled by the will, and dominated by right motive; and whether it is not possible, under the proper training, to educate children without fostering and inducing that which is abnormal.

The first hypothesis in education.

There are two hypotheses in education; call the prevailing hypothesis may be stated as follows: It is an absolute necessity to take the greater portion of school-time in training pupils to learn and make forms of expression, with the avowed purpose of using them in the future, when, *perchance*, they may be needed for the manifestation of thought.

I believe this is a fair statement of the motive which controls much of our school-work. The teacher believes that the forms in writing must be learned: first, for instance, the spelling; second, the etymology of words—the knowledge of the syntax of sentences; third, the elements and prin-

ciples of penmanship—the making of each letter separately, the combination of letters into words, the writing of copies and of pages of the copy-book; fourth, pupils copy from flat triangles, squares, cubes, and spheres, and all manner of forms, so that some day, when it becomes necessary to express an original concept on canvas, the necessary skill will have been acquired. The same can be said of notes in music: pupils learn these notes, learn to read them and to write them, so that when the impulse to discourse music comes, the notes will be ready, empty moulds to be filled with sweet sound!

The second hypothesis.

The second hypothesis is this: Is it possible to acquire all the technical skill needed for the adequate expression of thought, in each and all the modes of expression, under the immediate impulse of intrinsic thought, controlled by the will and dominated by the right motive? I place these two hypotheses side by side for your consideration. We have had a long experience in the former and a very slight experience in the latter; but the question should be asked most earnestly, Is it possible to devote all the time of the child in the most economical way in the search for intrinsic thought? I have presented phases of this same question in other relations over and over again, but this latter question is undoubtedly the most important, for it is the centre of all educational problems.

Is it possible to overcome self-consciousness?

I cannot leave this subject without a brief discussion of a question which is of profound interest to us as teachers. Is it possible to overcome habits of self-consciousness when formed, with all the defects involved? It *is* possible; but the one who conquers will no doubt learn to comprehend the

depth of the divine words,—"Blessed is he who overcometh." It is safe to say that much of the scientific teaching above the first grade, and even in that grade, consists of attempts to eradicate defects and change bad habits, which are the negative products of unscientific teaching. These habits, comprehended in self-consciousness, with its two baneful results, abnormal fear and equally abnormal self-conceit, stand as effectual barriers in the path of personal education: there is no way around them, they must be overcome, must be broken down, else education becomes a farce and a delusion.

Wasted energy.

The sin of wasted and misdirected energy has small place among current discussions of human ills; but it is an evil of evils, a sin of sins. To keep a soul in utter ignorance may be called the greatest waste of energy; but with the direct purpose of economizing energy by education, to deliberately waste it in abnormal obstructions, is a terrible loss to humanity. True education frees the human spirit, by making self-effort the highest and best, and at the same time the most economical. Education opens a "vista of fair things before, repeating things behind," stimulates to most effective action,—that action which reveals inaccessible heights still to be attempted. "'Tis not what man Does which exalts him, but what man Would do." A personal ideal that can be attained in *this* life, or by one individual in an infinite series, must of necessity be low.

> "All, I could never be,
> All, men ignored in me,
> This, I was worth to God, whose wheel the pitcher shaped."

Common experience abundantly proves that students may spend long years in the most laborious

drudgery and never develop the power of original imagination, inference, and consequent generalization. That power of the mind which is the supreme test of true education—the power to understand new phases of thought, to discover and to adapt new conditions to new needs—is lacking. History is replete with, and society full of such sad examples of defective teaching; indeed, pedantry to a great extent, to this day, controls public opinion. Whittier's lines,

> "Of all sad words of tongue or pen,
> The saddest are these,—'It might have been,'"

may be applied to memories of wasted energy—energy wasted in struggling to do the impossible, while leaving vast possibilities unrealized.

Self-confidence destroyed.

Sedulously cultivated habits of fear destroy self-confidence. The child is afraid to read, to write, to spell, to cipher, to recite, on account of the cruel spectres of fancied difficulties. No one can teach long without observing that many children are absolutely crippled by timidity: such children have a longing desire to do what they see done, but having an over-weening respect for the accomplishments of others, their minds and bodies are paralyzed by the emotion of fear,—*fear of making a mistake if they try.* It is needless to recount the many devices for the cultivation of this perilous emotion. They may be generalized in one sentence: "Here is something difficult, something you must try *very hard* to do; give attention, study, strive, and *perhaps* you may conquer." The "something very difficult" is the acquisition of *dead forms.* The exercise of that mental energy which makes forms of expression immediate and

Fear of making a mistake.

imperative necessities, sweeps away seeming difficulties as light dissipates darkness.

Self-conceit is not self-confidence, the true consciousness of self: it is the overweening, unwarranted self-satisfaction in a certain facility of action,—for instance, a glibness in recitation and a fertility of barren verbal memory which bad teaching demands and ignorant teachers praise. Add to constant approbation the complex and effective machinery of rewards, per-cents, prizes, and promotions, and the means of making a conceited donkey of a child are complete. Prizes put a premium upon superficiality, and frighten the fearful children (fearful because they have a great reverence for knowledge) into outer darkness.

Dull boys.

The common experience that dull boys often distance in real life their high-percented competitors, is easily explained. Reputed dulness in many cases, as I have already intimated, is the result of *an absolute refusal to learn words without understanding them.* "I think," began a bright little girl. "We don't want any *thinking* here: tell me what the book says."* This is a typical command from an unscientific teacher. The pedagogics of *defect* should constitute a main branch of the general subject.†

"We don't want any *thinking* here."

Effect of motive.

I can best illustrate means and methods of remedying defects in education, which are the products of defective teaching, by appealing directly to those teachers who catch a glimpse of the unlimited possibilities of scientific teaching. The

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* True.

† There is a pressing need for a work upon educational pathology.

effect of such a glimpse is often a discouragement which amounts to despair. "Conviction must precede conversion." A true teacher feels deeply the immense influence of his own knowledge and skill, or lack of them, upon his pupils. There is practically no limit to the instinctive ability of pupils to imitate their teacher in every detail of thought and expression, extending even to gestures, movements, and manner.

Influence of teacher's skill.

Great skill in penmanship—the ability to write rapidly, legibly, and beautifully upon both blackboard and paper—renders the task of training pupils to write a very easy matter indeed. It is perfectly safe to say that proper skill on the part of the teacher saves three fourths of the time of pupils in this direction, when compared with the results of training by teachers whose penmanship is poor. * A teacher who can exercise upon his pupils the enchantment produced by excellent oral reading has at command the best possible means of teaching elocution. A teacher skilful in drawing arouses, by the exercise of this art, a strong desire on the part of his pupils to do the same thing in the same way. No method in vocal music, however good, can begin to compensate for a teacher who cannot sing. The real grammar taught in a schoolroom is the language of the teacher. In fact, "As is the teacher, so is the school," may be truthfully interpreted "As is the skill of the teacher, so is the skill of his pupils."

The best substitute for skill.

There can be no efficient substitute for lack of skill in any of the modes of expression: the best

* Teachers who write poorly often teach writing well, but they use an over amount of energy in accomplishing this result.

makeshift comes from the teacher's frank acknowledgment of his weakness, and the practical expression of desire to improve, by courageously working with his pupils in acquiring the needed skill.

Failure in knowledge itself, failure to command subjects of thought, failure to understand relations, inability to present conditions for mental growth, *lie at the root of most imperfect teaching.* The very teachers who make quantity of knowledge the end and aim of teaching are generally those who have lost all zest and love for knowledge; they are fully convinced that they have enough on hand for present purposes. It seems a curious paradox, that many teachers whose sole aim is to *impart* (?) knowledge are not everlasting students themselves. If genuine exhibitions of skill have such an influence over pupils, how much greater is the influence of the teacher's attitude towards study!

Considerations that will lead a teacher to study.

A teacher who has not a profound appreciation of his responsibility and influence, who does not earnestly long for greater skill and more knowledge, cannot be counted with the efficient members of the profession. "I see clearly," a teacher should think, "that my influence over immortal minds is eternal, that whatsoever I am goes into the immortality of my pupils; their true success depends, to a great extent, upon me,—upon my knowledge, skill, and character. I am weak and inefficient; what I am, my pupils will be: shall I perpetuate weakness or strength? My efforts spring from my love for my pupils and my appreciation of their never-ending influence. I will acquire both that skill and knowledge so much needed for my sacred work."

Motive alone will overcome self-consciousness.

Motive, a high and holy motive, is alone sufficient to break down the barriers of fear and destroy self-conceit. What the wrong motive produced, the right motive, the love for humanity, must destroy. As is a teacher's love for his pupils, so is his work. It is a long and painful process for a teacher whose writing is a scrawl to acquire beautiful penmanship. It is more than difficult for a teacher who has years of flat-copy training to learn to draw. It is blessed for a teacher who has had his mind stiffened and stupefied by word—cram "to hunger and thirst after righteousness." But if love leads the way, miracles will be performed.

To *change the motive* is to overcome habits of fear or self-conceit. Undue consciousness of self is the direct product of wrong motive; it may be changed to righteous self-confidence by changing the motive. Timidity vanishes when the courage of duty and high purpose enters. Self-conceit is shattered when actions are controlled by high aims.

How motive may be changed.

Most children read orally as if they were unconscious of auditors: oral reading is generally a sort of muttering to one's self. No lessons in force, pitch, stress, or emphasis are sufficient to cure such habits. One thing alone will cure, and that is, to make a child *very anxious to be thoroughly understood in what he reads.* In that struggle all the arts of elocution will find a place,—under an all-controlling desire to make others think, feel, and appreciate the thought and emotion of the reader. Here is a simple illustration of all the cases of this kind. Lead pupils to forget themselves and their fears under the dominant stress of motive.

The motive of learning forms for form's sake, art for the sake of art (?), words for the sake of repeating them, elocution for the sake of elocution, leads directly to the dire evils of over-consciousness; the only cure for these evils is to reinstate the highest motive in supreme command, and with it unity of action. The altruistic motive is the intrinsic quality of the soul: it controls thought and expression; it directs method; its one criticism is, Are the results of expression adequate ?—do they have the proposed influence upon others? This motive directs action out of one's self towards others, and the false self sinks out of sight. "He who would save his life, must lose it."

The wrong motive.

Altruistic motive preserves unity of action.

That which is lost of time and struggle cannot be regained; but there can be a conversion—a new start, under which abnormal barriers may be overthrown, and the way to higher development opened. Keenness, acuteness, a low grade of insight and a high grade of pedantry, often spring from low motives; but inspiration, revelation, and prophecy come only to souls devoted to the weal of mankind. That which is true of humanity in general must be true of children. Self-consciousness may be overcome, but genuine economy is found in preserving the unity of action from the beginning; in sedulously cultivating the altruistic motive, self-confidence, and the most educative self-effort.

XII.

ACQUISITION OF THE FORMS OF THOUGHT EXPRESSION.

I WILL place side by side the two hypotheses already presented in former talks:

Two hypotheses.

FIRST HYPOTHESIS.	SECOND HYPOTHESIS.
Pupils must be trained to make the forms of thought expression, forms of language, art, and number, with no immediate relation to the thought the forms express. The purpose of this form making is the use of the forms in the future when needed for the expression of thought.	The technical skill necessary for the adequate expression of thought in all modes of expression may be thoroughly acquired under the immediate impulses of intrinsic thought, or the thought evolved in the study of the central subjects and their auxiliaries.

First hypothesis illustrated.

The first hypothesis may be illustrated by specific statements:

Penmanship.

(1) That forms in penmanship must be mechanically acquired by the persistent use of copy and copybooks; by drawing elements, principles, letters, and sentences.

Grammar.

(2) That power to understand and use language in speech and writing, may be acquired by the isolated and formal study of grammar.

(3) That constant drills in oral and written spelling, covering a period of eight years, are absolutely necessary. **Spelling.**

(4) That numerical figures and processes of figures, together with number tables, must be learned with little regard to the exercise of the reasoning powers. **Arithmetic.**

(5) That the ability to express thought through the manifestation of individual concepts may be acquired by copying models, paintings, and drawings. **Art.**

(6) That the mechanical making of musical sounds not "throughly informed" by thought and emotion, and the isolated learning of notes,—symbols of these sounds,—are fundamentally necessary for the cultivation of vocal music. **Music.**

(7) That special lessons in emphasis, pitch, inflections, stress, and all the properties of the voice unrelated to thought, are necessary as a preparation for the adequate power to express thought by oral reading and speech. **Elocution.**

This mechanical work upon the means of thought manifestation takes, generally stated, more than two thirds of the time spent by pupils in the primary and grammar grades—a course of eight years. There can be no reasonable motive for this vast expenditure of time, toil, and money except anticipated gain in the power to express thought, *when, in some future time, it may be evolved.* **Time taken for formal study.**

The propositions involved under the second hypothesis may be stated as follows: **Second hypothesis illustrated.**

(1) That the entire time and power of the pupils in school may be *concentrated upon intrinsic thought,* the thought embodied in the central **Concentration upon intrinsic thought.**

subjects. By intrinsic thought is meant the free action of the mind towards truth along the shortest line of resistance.

Motive. (2) That the function of expression is ethical; it determines and develops the motive for the concentration of the mind upon intrinsic thought. When educative acts of expression occur under unity of action, the reflex action develops the body as an instrument of expression, the mind as the centre of thought power, and the motive or soul as the director of the will.

Thought intensified. (3) That each and every act of educative expression intensifies intrinsic thought, cultivates physical power, trains the will, and enhances motive.

Technical difficulties overcome. (4) That the personal energy engendered by the necessity and desire to manifest thought is sufficient, when scientifically directed, to overcome all the technical difficulties of form.

Writing. (*a*) Writing, including spelling, punctuation, and capitalization, may be gradually and surely mastered by successive attempts to express thought.

Technical grammar. (*b*) Technical grammar, with its modifications of etymology, syntax, and prosody, may take enduring form and shape, when welded under the white heat of absorbing thought.

Number. (*c*) Efficient arithmetical power and skill may be acquired by the continual exercise of judgment and reason in the necessary application of numbers essential to a knowledge of the central subjects.

Voice. (*d*) The cultivation of the voice in music and elocution should be immediately controlled and governed by thought and emotion.

Art. (*e*) Art forms in modeling, painting, and draw-

ing may be best acquired under the immediate stimulus of the ideal to be manifested.

Economy.

Look at these propositions under the light of economy of human action. All the school-time of a pupil is concentrated upon intrinsic thought; every act of expression intensifies that thought. The forms of expression are adapted to the needs of the soul at every step. They grow with thought, conform to the thought, and are therefore genuine and adequate means of expression.

Physical training.

Physical exercise under unity of action is the best preserver of health, while it is at the same time a means of making the body the complete instrument of the soul.

Possibilities of knowledge enhanced.

The possibilities of knowledge and skill are thus immeasurably enhanced. Bring the untold energy which exhausts itself upon dead forms into living contact with truth, and the result will be that intellectual pigmies will give place to an army of giants.

Finally, every moment in education will be an ethical moment. Every act of the body, mind, and soul will be a unit; the body will be developed and immediately responsive to the soul's action along the line of the slightest resistance.

Changes brought about under the second hypothesis.

It is then of vast importance for us to discuss this hypothesis with the greatest care, for if it be true, its acceptance means infinite changes in the direction of higher development. It means the realization of possibilities undreamed of in the common ideal; it means an acquirement of skill and technique in the direction of adequate expression far exceeding any known results.

In considering this hypothesis it is well for us to ascertain if there be anything analogous to it in

human development outside of designed education.

Speech acquired under the second hypothesis.

Speech, that mode of expression which presents the greatest mechanical difficulties, is, and always has been, acquired under this general hypothesis, with this exception, thought, expressed by oral language and intensified by expression, is far from being intrinsic. A child acquires the forms of speech, including pronunciation, with all its elements, forms of idioms, or general arrangement of words in sentences, under the immediate impulse of a desire to express thought. It is true there are spontaneous preliminary exercises, "baby babblings," instinctive actions on the part of the child, which bring in time the various muscular coördinations of the organs of speech under the control of the will; but the main work of learning oral language is done entirely under the motive or desire to make others understand one's own thought. Forms of speech are learned by imitation, but the incentive to practise speech comes entirely from a desire to express thought. The countless difficulties and obstructions found in learning speech are steadily overcome by constant practice in the expression of thought. Vocal music and the gestures of a child are acquired in precisely the same way.

"Baby babblings."

Making.

Making, or the complete realization of individual concepts in external forms, presents the fewest difficulties in the application of the second hypothesis. If making be controlled by the function of the object made, all details, skill, and technique may be acquired with comparative ease. If, on the contrary, parts of an object are made without direct relation to the whole, parts that have no

Making without motive.

function in themselves, that are of no use except when adjusted or united with the whole object, then the motive, especially with a child, is not definite, and the mental action consequently weak. The child will easily overcome difficulties—for instance, the making of joints, of measuring and adjusting part to part—if he is controlled by the motive of function; that is, his action at every step will be stimulated by the desire to have the article made adapted to its use. This is the fundamental principle of the Sloyd.

In order to fully discuss the second hypothesis, and prove, if possible, its truth and capability of application under adequate teaching, the following questions must be answered:

Questions in the discussion.

(1) Are there sufficient opportunities to exercise and therefore develop adequate skill in each and every mode of expression under the impulses of intrinsic thought? To put the same question in another way: If the central subjects of study, the sciences, geography, and history, are made the essentials of school-work for eight years, and the various modes of expression are used whenever and wherever they are needed to intensify the thought, will there be practice enough to acquire the technique of writing, modeling, painting, drawing, etc.?

Opportunities for the development of skill.

(2) Are the exercises in skill, or technique, adapted at every step to the abilities of pupils? Or, to put the question negatively: If pupils are required to write, draw, etc., only under the impulses of thought, will not the technical difficulties be so great as to repress thought and cripple effort? In still other words, Is it not necessary to acquire skill in form-making beforehand, in order to lessen the effort when later forms may become of practical

Is the technique adapted to the ability of the child?

use? Is it ever necessary to have purely formal work? Must there be exercises in form for form's sake?

Adequacy of skill. (3) If it is possible to acquire skill in forms of expression under the second hypothesis, is it the more economical method of acquisition? Will the skill acquired be equal to that gained by direct and isolated form-making?

I will answer the first question in relation to the conceptive modes of expression; the conceptive modes being, it will be remembered, the complete expression of individual concepts by manual training, and the partial expression of concepts in modeling, painting, and drawing. Are there sufficient opportunities for the cultivation of these forms of expression growing out of the immediate needs of educative thought itself? Let us take geography as an illustration of the countless opportunities afforded. Geography is the study of the present appearance of the earth's surface. It is a study of forms by direct observation as in field lessons, or by imagination when the forms lie beyond the sense grasp. I have already shown the organic relation of observation to the conceptive modes of expression. A child observes a portion of the earth's surface; an immediate demand to model that surface in sand brings its concept into consciousness, and intensifies the products of observation. As an initial step, there is no other means so easy of execution, or so effective, as a demand to model that which a pupil has observed. Drawing or chalk-modeling of the surface should immediately follow modeling in sand. These expressions of concepts corresponding to surface forms gained by observation, are the indispensable means

Opportunities for exercise of art.

Geography.

Modeling in sand. Chalk modeling.

of cultivating the imagination; they require the simplest and easiest efforts. The concepts of surface forms, hills, valleys, slopes, and the like, need not be, from their nature, exact; they demand the broad sweeping lines instinctively employed by children, and do not require accuracy so far as definite limitations are concerned. The child's concepts are exceedingly crude, and a demand for an exact correspondence to any external form forces him to make something that in no wise corresponds to his own concept, and destroys the springs of art—spontaneity and *genuineness*.

Demand for exact correspondence.*

The products of observation are used in apperception for the construction of mental pictures of surface which lie beyond the material horizon. Here again is a wide field for the exercise of art. If the teacher admits no effort that is not genuine, the pupil must imagine the general nature of the surface that he models or draws. The mere copying of maps, like all copying, has the lowest educative influence, and worse than that, prevents a real study of surface by the interposition of conventional forms. An art critic—and every teacher should be one—can detect instantly the vast difference between pure products of the constructive imagination, and the base alloy of typical forms and barren imitations. The field for art in geography is practically unlimited, and furnishes no end of objects for initial practice.

Copying maps not art.

Every teacher an art critic.

Closely related to geography is the drawing

Geology.

* There is an essential difference between the adequate correspondence to a concept, and the adequate correspondence to an object. The first may be exceedingly crude, and still be adequate; the second must be by its very nature perfect.

necessary for geology, or the expression of thought gained by observation of the changes in the earth's surface through erosion and other causes,—drawing of river or brook cuttings, pictorial descriptions of the action of the wind and water upon the earth's surface; in a word, the effects of the action of the elements and forces continually changing the earth's surface by wearing and building. Geology, like geography, furnishes countless objects for modeling, painting, and drawing, with the difference that in this subject observation must be closer, and therefore expression more accurate.

Mineralogy.

The study of minerals makes modeling, painting, and drawing a necessity; the closest observations of the forms and colors of minerals can be brought about by a demand for conceptive expression.

Apparatus-making.

In physics and chemistry ingenuity may be taxed by the invention and construction of simple apparatus. An experiment is to be made, and the pupils must show the proper and exact conditions: this leads to the drawing of each piece of apparatus, followed by its making. This manual training breaks the rigid sequence properly required by Swedish Sloyd, but the intensity of motive aroused by the adaptation of the work to the experiment more than compensates for the deviation. It may be found possible to discover a sequence in apparatus-making preferable to the sequences of the present Sloyd.

Botany.

In botany, the modeling, painting, and drawing of leaves and flowers, of trees and shrubs,—indeed, of all kinds of plants,—afford infinite opportunities for effective art expression, stimulating and guiding observation as in no other way. Painting

should have a very prominent place in the study of botany. Leaves, bushes, and trees, to the eyes of the child, are patches of color; outline is not definite, but color is. Nature tells beautiful stories by color, shade, and tint. To draw a definite outline of a leaf or flower is not an initial step in art; through color the life of a plant is revealed to the child, and he should give it back as he receives it. The result may be a crude, unrecognizable daub to the art (?) teacher, but it is beautiful to the ingenuous child, and more beautiful to the teacher whose aim is to arouse self-effort, whose purpose is genuineness, and who feels "the future in the instant."

Painting.

Everything in education should be judged by its tendency,—not what it is at the present moment, but whither it is going. The courage to be crude is the only path to success. The point of criticism with the teacher should always be, "Did you tell by the picture what you wished to tell?" Modeling and painting are the initial steps to drawing. An effort to force a child to make an *accurate* drawing of anything at first is absurd, not to say wicked.

Courage to be crude.

Zoölogy, in this essential work of preparation, presents many and excellent opportunities for modeling as well as painting. What a child intuitively recognizes in an animal is character, revealed to him by its attitude or bearing. With a lump of clay he will express, very crudely to be sure, the character as he conceives it. This is the beginning of true art: if rightly guided, it will steadily grow; but if the demon of accuracy enters at first, talent flies, and genius is "cribbed, confined."

Zoölogy.

History.

Geographical drawings in relation to history are indispensable. Any attempt at a knowledge of history without a clear image of the surface or structure upon which described events have taken place, is well-nigh fruitless. In history, architectural drawings and paintings which illustrate the art of given periods, or peoples, may be made.

Countless opportunities for expression of thought.

The proper study of the central subjects will present opportunities without number for the expression of thought through the conceptive modes of expression. There is indeed no limit to the opportunities, and every effort may be made a means of enhancing thought. I believe that these facts will be granted on the part of every one who understands the relation of art to the discovery of truth.

Comparison of results.

Contrast the results of isolated drawing lessons two or three times a week under a special teacher who has very little knowledge or sympathy with the main work, with the results that may be obtained when art is related to all the central subjects, and effectively used to reinforce them. Under the former plan we have comparatively little practice in art; under the other, the necessities of the main studies make the practice continual. The great advantage speech has, in mechanical execution, over other modes of expression is that it is in *constant use;* and it may well be argued that the partial failure of art in education is due to the fact that its relation to other subjects has not been understood, and consequently few opportunities presented for its use.

Best method to develop skill.

Granted that the opportunities for art practice are unlimited when made a continual means of acquiring knowledge in all studies, a far more

difficult problem remains: *Is the modeling, painting, and drawing growing out of the study of the sciences, geography, and history best adapted in technical execution to the growing abilities of children?* Are not the difficulties too great in this direction, and will not the child's efforts be swamped in them? Is it not necessary to have many preliminary exercises in technical details to prepare pupils for the seemingly difficult expression of intrinsic thought? We meet here the prevailing argument that springs from an apparent necessity for a *logical* arrangement of difficulties, sequences of adaptation to energy. History is full of illustrations of supposed logical sequences.

Logical arrangement.

Illustrations.

The names of the letters must be learned.

Words must be learned before a sentence can be read.

The child must make the sounds of letters before he can read a word.

It is necessary to make elements, principles, single letters, before a sentence can be written.

Addition must be acquired before multiplication.

In drawing straight lines, curves, triangles, squares, rectangles, must be made as indispensable preliminary exercises.

These are only samples of the many illustrations of logical sequence claimed to be paramount necessities in teaching.

The principle of logical arrangement is fundamentally wrong: it fails to recognize the spontaneous powers of the child. It leaves out of the reckoning what the child has already acquired. It shows a complete ignorance of a child's method of acquiring knowledge and skill. *That which is ignored constantly in the child is motive, thought,*

Logical arrangement wrong.

previous development, and the unparalleled energy with which it overcomes difficulties and commands skill. Untold energy is wasted upon the acquisition of dead forms. Under the theory of concentration, each act of expression springs from and is dominated by strong desire to express thought. The sequences in technique are adapted and conform at every step to the thought to be expressed; the mechanics of expression is adequate to the conscious activities to be expressed, the sequence of difficulty is thus made perfect, and the development of skill will be in the highest degree economical.

Sequence of difficulties perfect.

Crudeness of concepts.

The only way in which one unskilled in these forms of expression can appreciate the extreme crudeness of a child's individual concepts is to attempt to model, paint, draw, or even to describe accurately some familiar object. When a child paints a leaf, for instance, the result is a daub, a blotch of color,—not in every case, perhaps, an exact correspondence to his concept, but the best indication of it. The child is pleased generally with his work; any dissatisfaction, however, shows that the correspondence of the "daub" to the concept is *felt* to be inadequate, and that a desire to do it better is aroused. This felt inadequacy is the true, yes, the only, line of criticism. Through the expression the teacher watches the action of the pupil's mind; he judges whether the expression equals the concept, and thus infers whether the pupil is lacking in skill, or in thought. In this process, genuineness, the intrinsic quality of art, is developed.

Genuineness.

Under the theory of logical sequence of form development, the principal demand is for an accuracy and an exactness which conform in no wise to

the concept. The results of this are a straining after an effect that does not correspond to an adequate cause, and a lack of genuineness that kills art feeling. It is supposed that the drawing of straight lines, curves, angles, etc., leads up to and makes possible the ability to express conscious activities by drawing. If such a result has ever been realized, it has not fallen under my notice. But even if it accomplished the desired end it would be, at best, a makeshift. Why should a child draw lines from flat copies when the object itself presents through color nothing but lines and surfaces? A drawn straight line is a rectangle, or better, a solid. The true line is the judgment of the meeting edges of two surfaces. In drawing an object, the judgment is called into play at every moment; thus, observation is stimulated as it can be in no other way.

Flat-copy drawing.

I once entered the art-room of an excellent school; it was a beautiful place for the practice of art studies: light and airy; the windows wreathed with ivy; pots of geraniums and other plants standing upon the broad sills; through the panes one could behold a lovely park, greensward, and magnificent trees; the pupils were hard at work *drawing leaves from flat copies.* They were making accurately and exactly, with painful pains, the rigidly unnatural and conventional forms of foliage; forms that when stamped in the brain shut the soul from the life and glory of a landscape.

Flat-copy study vs. nature study.

The only excuse for flat-copy drawing is the false demand for abnormal and mind-crippling accuracy. True accuracy has only one normal relation, and that is its relation to adequate expression of thought; *constant effort in the direction of ade-*

Accuracy abnormal.

quate thought expression is the one way and means by which adequate skill is acquired. The false assumption that a child must be accurate or nothing, leads to the abnormal demand for minutely detailed forms, and is a preparation which never prepares.

Confidence of the child.

Did you ever see a little child go to the blackboard to illustrate a fairy story, or to give free rein to his budding fancy? His self-confidence only equals his delight to express what he feels. With broad free lines, he draws hills, valleys, trees, bushes, houses, and people; no fear of mistakes, no apprehension of crudeness. Here is unity of action, self-confidence, and childish freedom. Step in, O teacher, if you dare, and break that unity of action, destroy that self-confidence, with your withering notions of accuracy! Tell the youthful artist that he has drawn all sides of the hill and the house, that the chimneys are tottering, that the trees are falling over, and that the men and women are skeletons. The child has done his best; please do your best; make one suggestion,—for instance, "You do not wish to have your chimney fall over, do you?"

How to criticise.

Remember that ease and equilibrium must precede precision, that the child is telling the story as he *feels* it, and that he will feel it better and tell it better if you give the help that he needs,—help that will not destroy his beautiful self-confidence, and crush out his delight in the work. That moment is a dangerous one for a child—indeed for any one—when the critical faculty surpasses skill. That is the reason why we do not learn to draw, my fellow teachers. If we could become "as a little child," we might acquire a skill that has

Do not destroy self-confidence.

hardly an equal in teaching power. Pace by pace, the critical power should keep step with skill, and both steadily move to higher levels. Recognize weakness, sympathize with it, and lead it with a loving hand toward the full strength of complete manhood. Remember, above all things, that it is not the rude sketch on the blackboard, but the soul of the child; not what he has done with chalk, but that which is done in the child's heart under the motive and the action of doing. The divine Pestalozzi said, "Education is the generation of power." Watch that power as you value immortal souls, develop that power as you believe in God and eternity.

Critical power should keep pace with skill.

Education is the generation of power.

Another questionable method that has a more reasonable basis than the theory of logical sequence is that art should begin with the *typical*, with the final generalized types of objects, and that the line of advance is from the general to the *particular*. It is truly shown that the infinite variety of shapes may be generalized into a few conventional forms, such as the sphere, the cube, the cylinder. The argument is, that having perfect (?) concepts of these typical forms, the particular shapes in which these types may be differentiated can be more effectually perceived or apperceived. There is a very important truth in these statements, but, like other truths, it is, too often, sadly misapplied.

The typical method.

The normal movement of mind is from particulars to generals, from crudeness, obscurity, towards clearness, distinctness, adequacy; this movement is inductive. Deductive movement is from generals to particulars, when it is possible; that is, when general notions become mental powers through processes of induction. With a child, it

Induction and deduction.

The modeling, painting, and drawing of typical forms, *making*.

is a long road from the crude concept to the clear, and the distinct. Modeling, painting, or drawing typical forms is *making*, pure and simple, and making with no other purpose than the mere expression of a concept; the object made is of no use, as in the Sloyd; it does not embody thought, as in art; motive is at the lowest ebb. The making of typical forms should be confined to manual training, in which the making of a combination of such forms may be an article of practical use, and therefore hold attention and expression under that motive.

There are no typical forms in nature, the great storehouse of art studies and the realm of the beautiful: here every shape deviates from perfect form; it is irregular and individual; it expresses a definite character which differs from all other characters; it is art to find that character and express it. Form and color are manifestations of the invisible; true art transcends mere imitation of either. No matter how crude the child's ingenuous modeling or drawing may be, you see in his work an attempt to express something more than mere form or color, you are struck by the motive or feeling; the drawing may be out of joint and the perspective wholly bad, but there is an indefinable something that makes you certain of an attempt to express thought.

Development of art feeling.

This indication of *feeling* is the germ of art; be careful not to crush it by injudicious criticism, either of blame or praise; nourish it, give it countless opportunities for exercise, make it the centre of well-considered suggestions that will lead the young artist to be a true critic of self,—of his own thought and skill,—and art may thus be made one

of the most influential factors in education. If accurate work and typical forms are demanded as initial steps in art, then our second question must be answered in the negative. Modeling, painting, and drawing cannot be used to intensify intrinsic thought, when there is no thought—outside of the concept in itself.

Cultivate genuineness.

But if genuineness is made the *sine qua non* of art training; if crudeness, daubs, and even blotches, with a faint show of feeling, are gladly accepted because they are genuine expressions of the child; if art is made the principal means of intensifying the thought continually evolved in all the central subjects; if pupils strive to express thought adequately, and in the striving become acute self-critics; if nothing is expected or demanded of pupils except the honest manifestation of that which they feel; if development of thought demands of itself development of skill,—then the way is open and the method plain; by no other plan of teaching will the demands of technique conform to individual ability, and consequently present the efficient means for ever-increasing skill.

Art for art's sake.

Of all the shallow, heartless sayings, "Art for art's sake" seems to be the culmination and climax. "Money for money's sake," "Knowledge for the sake of knowledge," are comparable phrases. There is nothing in this universe that is not for the sake of human souls and their salvation.

Theory of concentration in art.

The theory of concentration brings art home to every child; makes it an incomparable means of personal education; discloses hidden springs of beauty; turns its vast influence upon intellectual power; cultivates the most exalted emotions and the noblest motives; leads to an absorbing love of

the beautiful in nature and art; unites it with all other conditions of educative work; but best of all, it takes art from its isolation and renders it a common good.

Direction of art studies.

I have not the slightest doubt concerning the direction of art in education: it is to be made the strongest aid to attention, the mightiest help to observation, and the most powerful stimulus to the imagination; it is to become an indispensable auxiliary to all study. But I have grave doubts in regard to the length of time it will take to bring art home, and place it among the infinite possibilities of human development.

Drawing introduced for commercial value.

Drawing was introduced into our schools for the purpose,—not of intrinsic value as a means of education, but as a means of training skilled artisans; the end determined the means and the method, the road to artisan work seemed to be through artisan training. This motive isolated drawing from all other subjects; special schools were established for it; special teachers were trained to do the work. The special teachers degraded art through misdirected attempts to exalt it; and on the other hand, the regular teachers, failing to see the relation of drawing to every other subject, have had little sympathy with it and, besides, little or no skill to teach it.

Pioneers of art teaching.

I would not have you understand that I do not appreciate the earnest, honest efforts that have been made by the pioneers of art studies all over the country; they have done the greatest of works, —*they have made progress possible.* There must be beginnings; still it should be remembered that beginnings, like majorities, are rarely right. Very little has yet been done in the new direction; in-

deed, everything is *new* * in that education which is to set human souls free. The principles are nearly nineteen hundred years old, but the application still awaits the teacher.

Art awaits the teachers, teachers inspired by the truth, with some insight of the marvelous possibilities of this subject; teachers who, with an understanding of its great value in education, will have the courage to carry its inestimable blessings to every child.

Art awaits the teacher.

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* *New* in relation.

XIII.

SPEECH AND WRITING.

In teaching, demands for expression under each and all the modes should be demands for educative thought. Gesture, it can easily be conceived, is a primitive mode of expression, out of which are evolved making, modeling, painting, drawing, and writing. Through vocal music the æsthetic and emotional nature is enriched, the vocal organs and instruments of speech developed. All the conceptive modes stimulate and direct observation, exercise imagination, and concentrate mental energy. Each and every mode has its special educative function. Of the discussions of the mechanics and functions of the various modes of expression, speech and writing alone remain.

Gesture.

Vocal music.

Conceptive modes.

Speech and writing.

Speech and writing, up to a recent period, have been almost exclusively used as a potent means in education; but it remains for us to inquire, nevertheless, whether they have been used to the best possible advantage, and whether improvements cannot be made in their use and development.

Mechanics of speech.

The mechanics of speech consists:

(1) In making, through the use of the breath, vocal and non-vocal, and the various adjustments of the organs of speech, distinct sounds or elements—forty, at the very least calculation. This process is enunciation.

Enunciation.

(2) These sounds are joined or articulated in

words. The articulation of words requires as many positions of the organs of speech as there are elements in the word. Between the utterances of two syllables of the same word there is a perceptible pause, and still longer pauses between words and sentences. **Articulation.**

(3) In words of two syllables, there is a slight inflection or accent upon one of them. **Accent.**

Pronunciation, or the making of oral words, consists of: **Pronunciation.**

(*a*) Enunciation of each element.

(*b*) Articulation of the elements.

(*c*) Accent upon one syllable, of words of more than one syllable.

(*d*) Perceptible pauses between two syllables in the same word.

(4) Sentence-making, or the joining of words into arbitrary conventional or idiomatic relations. **The idiom.**

(5) Between successive words there are pauses, longer or shorter, indicating the relation of words, phrases, and clauses to the whole sentence. **Pauses.**

In idioms we have the relation of words, phrases, and clauses in sentences, or syntax; the variable forms of words, or etymology. **Syntax and etymology.**

Pronunciation and sentence-making may be called the mechanics of speech.

Back of articulation is voice,—a mode of expression parallel with, and as spontaneous as, gesture. The instinctive attributes of voice are,—pitch, force, and quality, with the varying elements of stress, inflection, rhythm, emphasis, etc. By instinctive attributes are meant the direct reflexes of conscious states. These are projected into and become essential qualities of acquired speech, or articulate voice. **Attributes of voice.**

Imitation.

The mechanics of speech, single and combined, is acquired by imitation, if we except the potent influence of analogies. Whatever language, dialect, pronunciation, idiom, correct or false, a child hears becomes its habit in the use of oral language, and once sunk into the automatic, fixed in habit, is changed with the greatest difficulty. In pronunciation and syntax, the child imitates only sounds and unities of sounds; it cannot copy the placings and positions of all the vocal organs, for the good reason that all cannot be observed; they are hidden from view.

Hearing-language.

Hearing or understanding language must of necessity precede the effort to speak. The correspondence of oral words and sentences must be associated in consciousness with their appropriate ideas or activities.

From the awakening of conscious life, the process dates: First, a period of ten months or a year in hearing-language. This period is marked by "baby babblings," the instinctive use both of voice and the organs of speech; the daily and hourly practice by which the infant finally learns the use of both, bringing them under control of the will, is generally unmarked by parents and educators who see in it merely the baby's delight in "making a noise." This constant and persistent effort to enunciate and articulate leads naturally to the higher processes, to the making of words, the joining of words into phrases, and, at length, into sentences. Two years' practice is sufficient with the average child for the mastery of the elementary sounds, the pronunciation of a limited vocabulary, and the practical syntax or use of simple idioms. There is probably no acquirement in

Learning to talk.

after-life that equals this overcoming of the difficulties of speech on the part of the child. The method of this wonderful acquisition, did we but know it, is a perfect method of learning all languages; and the closest study of this method of nature should not, because it is so common, be undervalued by parents and teachers. It is, as it were, "catching Nature in the act." The question cannot but present itself: If a child acquires so much in so short a time, during the undeveloped state of infancy, why is this natural instinctive method not taken advantage of?

Imitation is the absolute basis in acquiring mechanical forms, but imitation in itself is only a secondary and subservient factor in learning language. Behind every mechanical effort is an energy that directs and controls the action of the organs of speech. That energy is:

Thought energy.

(1) Motive to make others understand.

(2) The thought to be expressed.

(3) The exercise of the will in control of thought and expression.

The thought and emotion which impel to vocal expression manifest themselves in emphasis, rhythmic cadence, melody and harmony, varieties of force, pitch, and quality, by which the thought is discriminated, and the character of the emotion demonstrated. These factors of voice are instinctive and spontaneous; they are the direct reflex of conscious activities, and *can be cultivated only as thought and emotion are developed and expressed.* To attempt to imitate melody, emphasis, and harmony is to caricature thought expression. Stress, distinct enunciation, articulation, and pronunciation are dominated and impelled by the desire to

Spontaneous factors of the voice.

make others understand. The movement of the spoken language in its development with the child is along the exact line of the movement and growth of its thought; the language conforms strictly to the thought, and keeps pace with it in co-ordinate exercise. The unity of action is perfectly maintained at every step; this is shown by the melody, harmony, and perfect emphasis of the child: *it never makes a mistake in emphasis.*

Unity of action.

Is it possible to continue this unity of action in all the future steps and stages of education? The child enters school with physical, mental, and moral powers developed by six years of constant action. "It has learned more in the first six years of its life," says Hegel, "than it ever afterwards can learn." All improved methods of teaching that have ever been discovered spring from a study of the spontaneous activities of the child—his knowledge and power, his methods of learning and skill — before entering the school-room. Right methods in school are simply the continuation of nature's methods. An unnatural method, which moves onward in zigzag instead of straight lines, obstructs or deflects energy; for whatever intellectual power a pupil acquires must be acquired through natural methods—those methods which spring from and are guided by the inherent tendencies of the being. The method under which children acquire the power of speech can never be improved; but it may be enhanced by new matter and changed conditions.

All improved methods spring from a knowledge of the child's spontaneous activities.

Nature's methods.

Writing.

Another mode of expression confronts the child at the door of the school-room—that of writing. Its influence upon education may be made as potent as that of speech. When should a pupil

begin to write? That depends upon the child. Some children are born five years old, and some are not born until they are five years old. This question, then, must be answered for each child. When a little child exhibits a desire to write, let him try; if the attempt is successful, the time has come. There is nothing mysterious or essentially difficult in the act of writing; the mechanics of penmanship is exceedingly simple—in fact, it is more easily acquired under a natural method than any other mode of expression.

When should a child begin to write?

All written forms consist of simple—straight and curved—lines; in the small letters there are thirty straight lines in exactly the same relative position—eighteen of the same length, and twelve of varying lengths. These straight lines constitute the principal parts of all the small letters except *e*, *o*, *c*, and *s*. The straight lines are connected by simple curves in five or six different positions. All the capitals consist of ellipses, compound and simple curves. Compare the utter simplicity of these forms of penmanship, the results of comparatively simple adjustments of arm and hand, with the complexities of enunciation, the results of the almost infinite adjustments of lungs, larynx, and the organs of speech.

Analysis of penmanship.

The argument of previous preparation holds here as well; for the arm and hand have been constantly exercised in functional use—manipulations in making, drawing, and imitative acts of writing. The pen, if it is good, with easy-flowing ink, requires the least possible physical energy to manage, and, under skilful instruction, in which the pupil is not made unduly self-conscious, is very soon under control.

What a child brings to the work of learning to write.

The pupil comes to the work of learning to write with six years' active use of the whole body—six years' exercise of the mind, and six years' practice in speech. The mechanical difficulties of writing are very much less than those of speech, although speech has the advantage of the absence of any artificial addenda, a more continuous practice, and a stronger and more instinctive impulse from the thought side, for—

Learning to talk and learning to write, compared.

(1) The motive in speech is keener, as the desire to make some one understand *immediately* excites the will, while in writing this incentive is generally lacking.

(2) In writing one may have thought and emotions, but they find no expression in emphasis, melody, and harmony.

(3) The vocal organs are adjusted to the action of speech.

(4) Exercises in hearing-language and speaking are more continuous and common with children than writing. All these advantages of speech may be overcome in a measure by using the natural method.

Children who have been made self-conscious while learning to talk, if taught to write properly will use the written form of expression in recitation more easily than that of speech. This is the explanation, nine cases out of ten, why, given the same facilities for practice, one mode of expression is so much more at command than another. In speech, because of youth and a more natural environment, children generally preserve unity of action. Unity of action requires the minimum expenditure of physical energy for intelligible or legible expression. The vocal organs are instinc-

tively adjusted; in writing, however, the muscular co-ordinations, the adjustment of the body and its agents to unity of action, are less a part of inheritance; consequently, in order to bring about the necessary repetition required to make such habits as must be fixed sink quickly and unconsciously into the automatic, the highest art of the teacher is required. The question of the perfect attitude and position of the body, and the movement requiring the least possible physical energy for legible writing, is one of the first importance, because the unlearning of a bad habit is a much more serious thing than the acquirement of a good one.

The best possible position for writing.

A *smooth line* is an infallible indication of ease in writing. The first point to be settled is,—in what position and by what movement can a smooth line be made with a pen ?

Smooth line.

(1) Place yourself before a desk of the proper height; rest the forearm easily and lightly upon it. There should be no tension caused by raising the arm too high, or dropping it too low.

Desk.

(2) Sit in a chair that will allow you to rest the feet flat upon the floor, the legs forming an obtuse angle at the knees.

Chair.

(3) Sit square to the front of the table or desk, providing the full forearm can easily rest upon it; otherwise sit at the slightest possible angle that will allow you to rest the forearm wholly upon the desk.*

Position in regard to desk.

(4) Have the forearm form an obtuse angle at the elbow with the upper arm.

Forearm.

(5) Place the forearm parallel to the right and left edges of the paper, and in moving the forearm

Paper.

*Desks and chairs that can be adjusted to children, *are very much needed.*

from left to right, keep it parallel with the right and left edges.

Wrist. (6) Let the wrist rest without pressure flat upon the paper.

Pen. (7) Let the pen *rest* between the thumb, the index and second fingers.

(8) Let the pressure of the pen upon the paper be equal upon both nibs.

The whole body should be in the easiest possible position for the required action; the energy should be withdrawn from the arm, which should rest upon the desk with the least possible tension of muscle.

The angle of 51°—52°. In this position, draw the arm down, with no purpose but to make a straight line; *the angle thus made will be between* 51° *and* 52°. This movement following the prescribed position requires the least expenditure of energy to make a smooth line; indeed, it may be doubted whether smooth lines in writing can be continually made in any other way. A smooth line requires a rapid movement of the pen. The movement across the page from straight line to straight line is made in curves.

Principles of the American handwriting. I have given in detail the fundamental principles of the American or Spencerian handwriting. Its discoverer found the *law of the easiest movement consistent with legibility, and, at the same time, with the greatest economy of physical action.*

Finger-movement. The value of the arm-movement can be best appreciated by contrasting it with the finger-movement. The latter movement demands a constant tension or contraction of the muscles of the fingers. In proof of this I have but to ask you to recall a room full of pupils writing with their fingers. Let us note results and positions:

(1) The letters are made slowly, with an undue expenditure of physical energy.

(2) The lines are rough, no matter how sharply cut and distinct the letter may be. **Rough lines.**

(3) The hand is *deformed* by unnecessary tension. **Deformed hand.**

(4) The whole body conforms to the deformity of the hand; the feet, the head, the shoulders, the trunk and the face give evidence of painful effort.

(5) If by persistent effort a determined drill-master makes his pupils assume the right position, the constraint becomes more painful, for deformity of the whole body relieves for the time the deformity of the hand.

But the climax of difficulty is reached when teachers, as they do in great numbers, *train their pupils to write the slanting hand with the finger-movement.* **Making the slant with the finger-movement.**

The slant required (51° — 52°) is perfectly adapted to the arm-movement, *but wholly unnatural for the finger-movement.* The finger-movement, when natural, is perpendicular or vertical. The renaissance of the old-fashioned English "pothooks and hangers" is a strong protest against the body-crippling struggle to make slanting lines with the fingers. If the fingers must go up and down in writing, by all means allow the children to move their digits as easily as possible. **English "pothooks and hangers."**

The strong reaction in favor of perpendicular penmanship, I repeat, has its origin in long-continued attempts to make slanting lines with the up-and-down movement of the fingers. The sole reason for the slanting line is that it is made with the least possible expenditure of physical energy.

The strongest reason why the finger-movement

Reason against the finger-movement.

should not be used is given in the talk upon *unity of action.* Nerve currents according to the latest

Diffusion of nerve currents.

authorities in child-study,* are, distributed very slowly from the spinal cord to the bodily extremities. This fact gives us the reason why children move more freely and naturally in broad lines or curves, and why the attempt to train the extremities and lead them to make short lines and curves before due strength has been received from the centre, *reacts upon that centre, weakening and*

Slate-writing.

crippling the whole body. Slate-writing, or the painfully slow movements of the fingers in pushing the pencil over a resisting surface, is a common illustration of the manner in which the body is ignorantly weakened. But the crippling of the physical organism does not tell the whole of the sad story; the muscles of the fingers and forearm become more and more tense and contracted; the wrong habit becomes fixed, and where constant use of the pen is demanded writer's cramp is the inevitable outcome.

Unhealthful positions.

Advocates of vertical penmanship point to the unhealthful positions of pupils. They say: "The disease to be attacked is Bad Writing and Bad Health, the twin children of sloping writing." The bad positions and consequent deformity of the body are due to the attempt to make the slope by the *up-and-down movement of the*

Making the slant with the fingers unnatural.

fingers. Making the slant with the fingers causes them to be twisted to the right, thus inducing unnatural tension and constraint. The vertical line requires the least effort on the part of the fingers. The sloping writing was looked upon merely as a "fashion," a "fad," for the time; no

* Dr. J. Stanley Hall.

regard was paid to the principle which underlies it, and the poor children were taught to do a right thing in an unnatural way.

Argument in favor of vertical writing.

There is one insuperable argument, if true, brought in favor of vertical writing, and that is the supposition that the slant affects binocular vision unfavorably. If this be granted, it is a sound argument for vertical writing, but no argument against arm-movement, because it can be shown that vertical writing, as well, *is best made by the arm-movement. Change the angle of the paper to the forearm, and the thing is done;* vertical writing is there, and the arm-movement remains. Indeed, every argument goes to prove that writing with the whole arm, reinforced by the easiest and most natural position of the body, is the only normal, healthful position.

Best vertical writing by the arm-movement.

But the argument for the arm-movement is by no means completed when the mechanical and optical difficulties of writing and reading are shown to be in its favor. There are two hypotheses that may be applied to penmanship, the first, as follows:

First hypothesis.

All forms of writing, including spelling, punctuation, spacing, and capitalization, should be acquired in a purely mechanical way, with no relation to thought, so that in the future, when thought is to be expressed, these forms may be ready for use.

Methods of finger-movement.

The methods, devices, and details of mechanical work, under this hypothesis, are well known to most teachers of experience; they have many variations, improvements, and changes that are not improvements.

(1) The careful drawing of elements, principles, and letters upon slate or paper.

(2) The combination of letters into words, and words into sentences.

Copy-books. (3) The use of copy-books for six or more years, beginning, as before, with elements and principles, followed by words and sentences, all to be copied by the page with painful exactness.

Written spelling. (4) Written spelling, supplementary oral spelling, writing from dictation, and recollection of long lists of words and sentences; copying paragraphs from the reader.

Compositions. (5) *Occasional* attempts at writing original sentences and compositions.

Tracing letters. The above work is often varied by tracing letters, words, and sentences. Much precious time is spent, much hard work or drudgery is given to this painful preparation for the expression of thought, *when it comes.* The writing is generally very slow, except when by an *extravagant expenditure* of energy the cramped fingers are made to move over the page with rapidity.

Second hypothesis. The second hypothesis, that of concentration, is as follows: All forms of writing, including spelling, punctuation, spacing and capitalization, may be adequately acquired under the immediate impulses of intrinsic or educative thought. The method under this hypothesis perhaps needs more explanation than that of the first.

Method under second hypothesis. (1) Educative original thought is developed, throughout the course of eight years, by observation, reading, study of the natural sciences, geography, myth, history, literature, form and number. The principles of this concentrated study have been explained in former lectures. The sources of continual interest are the discovery of facts, the

making of original inferences, and the delights of observation and imagination.

Writing acquired precisely as speech is acquired.

(2) Precisely as speech has been acquired, writing is learned, with this great difference: skill in writing is acquired under far more favorable circumstances than it is in the acquisition of oral language; these are observation and imitation of excellent copies made by the teachers, and above all the continual excitation of interesting subjects of thought. To these acts the child brings all his experience, skill, and power, gained by six years' constant practice in thinking and the skilful use of his body. The guidance of the teacher is systematic and logical, adapted to each personality.

Fundamental principle of arm-movement.

The main thing and the true thing is that there is personal energy, personal motive, and intrinsic thought, impelling every attempt; energy, motive, and thought which develop the feeling of right and power.

Closely related to writing are manual training, modeling, painting, drawing, music and speech, all enhancing the skill to write, and each strengthening the other; all, in turn, concentrated upon thought power. It may be well to further explain these principles by giving some details of the method.

Method of teaching children to write illustrated.

The little folks of the first grade enter at once upon the study of science, myth, and history; speech, modeling, and painting are freely used to develop thought. At the right time, a prominent word is needed; it is given orally, and then written rapidly and well by the teacher upon the blackboard. "Who can give me this word as I have given it to you?" Every hand will be up. A quick, effective glance at the word by the sparkling

eyes,—*the word is erased*,—and the little ones write the word. The results will be crude and *beautiful*, the writing will be characterized by broad, sweeping lines; the work will be done rapidly; a mental picture of the word will be closely held and quickly expressed. If the children are allowed to *copy* the word, the writing will be much slower and less effective. The children read aloud with delight the word they have written. This is the beginning of reading, writing, and spelling. I should have said that some lessons in reading from the blackboard should precede the first attempts to write, the written words springing directly from the thought. After a few words written upon the blackboard, the children may try a whole original sentence, the expression of a thought first expressed orally. In a very short time children under skilful training will acquire a wonderful power of writing original sentences. They then read their own sentences orally, or, better, *tell what they have written!* If the lessons written upon the blackboard are printed, the children will read them as readily as they do script from the board. The pupils, after they have acquired some skill in writing upon the blackboard, take pens and write, with the same sweeping arm-movement, upon paper. Here may now begin some drills in pen-movement alone.

Copying not allowed.

Writing original sentences.

Reading script and print.

From these initial steps on, through the eight years, writing is made a potent means of intensifying and relating thought and recapitulating subjects.

If I have made this method seem easy for the teacher, I must correct the mistake. First of all, the teacher must be an excellent penman and

Method not an easy one for the teacher.

blackboard writer. Pupils will imitate their teacher with the greatest accuracy, not only her writing, but her *manner* of writing. Clear, legible, and rapid writing on the part of the teacher is more than half the victory in training pupils to write.

Penmanship of the teacher.

The writing of the teacher, however, important as it is, is but a tithe of the influence that must be brought to bear. The main thing is the *tact, skill, and power to excite interesting related thought in the minds of the pupils.*

I have discussed this matter in every lecture that I have given, and still enough in this direction cannot be said. *Arouse the energy and set it free;* "complete the organic circuit," as Dr. Dewey says. When a child writes a word, he gives back what he has received and just as he received it; it passes over the optic-nerve tract, and is immediately "discharged" through the arm and hand.

The organic circuit.

A wonderful discovery.

I have thus briefly illustrated a remarkable if not wonderful discovery in the art of teaching. The discovery consists in the fact that children can write words upon the blackboard with the same power and ease that they pronounce them. By the skilful application of this discovery, all the painful and painstaking drudgery of carefully drawing elements, principles, and letters, of slowly copying words and sentences, is entirely unnecessary. The fact is proved beyond a doubt that a child is capable, impelled by intrinsic thought and guided by skilful teaching, of writing rapidly and easily whole words and original sentences. The first results, as I have already said, will be crude, just as the first attempts at speak-

ing are crude; but under thoughtful direction they may be steadily improved. The true inwardness of this simple device is that the child takes great delight in expressing his thought with the crayon, and practises as naturally and unconsciously under the desire to tell his written story as in previous years he lisped, in imperfect numbers, his spoken story.

Oral reading.

In the first steps in teaching reading, writing may be made a far more effective means than oral reading. As I have already said, the child gives back the thought just as he receives it. When writing a word under the impulse of thought, the acts of association are made continuous and effective. No device for the first steps in writing has ever been found more satisfactory than writing upon the blackboard. Blackboards, it goes without saying, should be so constructed as to present the least possible resistance to the movement of the arm.* The crayon should be of the best quality. The child writes with his whole body; he stands with perfect ease; the arm moves with a broad, easy swing, rhythmic and beautiful. When a word is written by the teacher and immediately erased, one glance of the eye is sufficient to mirror the word in consciousness; the child holds it by an act of the will and immediately reproduces it. Thus, rapid writing is made a necessity. The same can be said of the making of original sentences. The child thinks quickly; that is, the movement of consciousness is very rapid; the thought is discharged through the arm as soon as it is felt in consciousness.

*Blackboards for primary-school use should be made not more than two feet two inches from the floor.

Slow writing cannot be the expression of immediate thought. In slow writing the whole energy of the mind is absorbed in the recollection and reproduction of words alone. Writing, to be the immediate expression of immediate thought, must keep pace with the movement of consciousness. The slowest movement of consciousness requires comparatively rapid writing. In speech the activities of consciousness are instantaneously "discharged" through the vocal organs, and the reflex action of the expression upon thought is perfect. In slow writing, written words are recalled, or speech is slowly translated into written forms. In either case, there can be no immediate or intense thought action. Strong, vigorous thinkers can rarely write slowly; if their skill is imperfect, readers and compositors are driven to their wits' ends to translate their scrawls. If such persons should attempt to write slowly enough for legibility, thought action would be greatly impeded or stopped altogether.

Arguments against slow writing.

Slow writing not educative.

The proposition is, then, that writing should be made educative from first to last. By educative writing is meant—first, intrinsic thought; second, its immediate expression through the arm upon paper. Such acts of expression react upon the thought expressed and intensify it. Educative writing is an economical means of sharpening and directing observation, of cultivating the imagination by description, and of developing the power of original inference; slow writing is not educative, or, to say the most, is indirectly educative.

Educative writing explained.

The arguments in favor of rapid writing seem to be unanswerable.

Arguments in favor of rapid writing.

(1) Rapid writing is directly educative.

(2) A smooth line is an indispensable factor in good rapid writing. It is a sure indication of possible improvement in form and rapidity; while the rugged lines and letters made by the fingers rarely improve in legibility after three or four years of practice in school. Writer's cramp is directly traceable to finger-movement.

Spelling, punctuation, and capitalization.

(3) Spelling, punctuation, capitalization, are most economically acquired by writing. Written examinations, recapitulations of subjects, abstracts of studies, and compositions are prominent factors in education. By slow writing, much time is squandered in these exercises. The more rapidly a pupil is able to write,—provided, of course, he writes legibly,—the more work can be done in a given time. By using the arm-movement from the first, unity of action, unity of consciousness, brain, and hand may be perfectly maintained. This unity of action is an absolute necessity to freedom of thought; when energy is absorbed in physical action, it is withdrawn from thought action; therefore the thought action is greatly impeded, if not altogether stopped.

Arm-movement healthful.

(4) The arm-movement is perfectly adapted to the best, and therefore the most healthful, attitude, and under even the most constant practice does not lead to a crippling or deforming of the body.

Skill in writing sunk into the automatic.

(5) Skill obtained by the arm-movement is easily sunk into the automatic, and requires the least possible mental energy in manipulation; while the slow, painful movements of finger-writing demand a continual muscular tension that reacts and inhibits mental action.

To sum up, rapid legible writing may be easily made an exceedingly efficient means of mental and

physical development. By it all the forms of language and of grammar may be economically acquired, and writing made just as efficient a means of education as speech itself.

Function of speech and writing.

The function of speech and writing in education is to intensify intrinsic or educative thought, and to enhance its quality. The motive of speech and writing is to interpret self to others. The stronger the motive, the more intense will be the thought action, and consequently the more intelligible or legible the expression. All forms of language are most economically shaped and molded under the white heat of thought in the action of expression.

Relative value of speech and writing.

Speech and writing are the direct complements of each other in their respective functions; each has an office which the other does not perform so effectively, and which, in turn, mutually enhances the other. Speech springs more immediately from the impulses of thought, and is reinforced by the spontaneous reflexes of consciousness; rhythm, emphasis, and gesture; the movement of speech is more rapid than writing. The slower movement of writing requires a slight hemming and consequent deliberation and elaboration. The motive of speech is the immediate understanding, while that of writing, with the exception of the first steps, is the expression of thought for after-reading.

Speech is generally more fragmentary and unconnected than writing. Writing may be effectively used to relate lines of thought in general descriptions, summaries, recapitulations of lessons, topics, and subjects.

Rapid writing to be used in all recitations.

Rapid writing should be freely used in all recitations. To illustrate: pens and ink are in good

condition and ready for action; the teacher, by induction, leads up to an original inference or a generalization. The teacher asks the final question, and hands are up for answers. "Write it," says the teacher. The written answer will be a test, at the same time, of the pupil's personal power and the teacher's skill. At the beginning of the lesson, the teacher requests a brief summary of the previous lesson. In laboratory-work, writing may be effectively used in taking notes.

Preservation of written work.

It is a good plan to preserve the written work of pupils in some convenient case or box, so that pupils may occasionally examine their own writing and thus make note of progress.

It is not my purpose to present methods and devices in detail; I wish rather to show by principles and a few illustrations how efficiently speech and writing may be used as a direct means of mental development. The proposition is that from first to last, throughout the course of eight years, speech and writing in the study of the central and auxiliary subjects may be made a powerful and influential means for the development of the whole being; that the unity of action may thus be preserved; that all the forms of language, pronunciation, spelling, punctuation, capitalization, etymology and syntax may be thoroughly and economically mastered.

Eight years' practice in speech and writing.

These claims are indeed great, but they demand thoughtful consideration because the theory seems sound and because they have been partially proved by careful and critical teachers.

Eight years' constant work in experimentation, investigation, observation, and study of the central subjects and their auxiliaries; eight years

spent in processes of reasoning and collecting data for correct original inferences; eight years in the discovery, assimilation, and application of divine laws; eight years in the continual use of speech and writing as an indispensable means of educative thinking! Contrast this scheme with eight years spent (the greater part) in purely formal studies. Consider, if you please, the precious time saved and the power gained if all the countless opportunities for the expression of thought in the study of geography, science, and history are taken advantage of.

Methods of teaching grammar.

There remains another important question for closer discussion, and that is the much-mooted subject of methods of teaching grammar. Grammar has two functions in education, namely:

Purpose of teaching grammar.

(1) The correct use in speech and writing of the conventional forms of language, those forms which are sanctioned by the best usage.

(2) The cultivation of the power to understand, to gain a clear and close insight into meaning, the ability to "penetrate thought." Thus grammar, properly taught, should enhance the power to study, to read, and to understand speech. In a higher sense, grammar is the elementary study of English and of philology, and, still higher, it is a substantial basis for the study of psychology.

English a grammarless language.

Although English is a comparatively grammarless language, still what there is of grammar should be thoroughly mastered: *it should be taught in all grades of the elementary school.* The question is simply and solely, *How should it be taught?* Should it become the warp and woof of all teaching; should every lesson in every subject be a lesson in grammar? or, should grammar

be made an isolated subject, taught for itself and by itself? We have plenty of experience under the latter method, which proposes to teach language for *future use.* Under the hypothesis of constant adaptation to present conditions, language is taught for immediate use, precisely as speech is acquired for *immediate use* by the little child; the language at every step *conforms* to thought, is evolved with thought, springs out of the necessities of mental action and is adequate to it: in other words, the body of language grows with the soul of the thought.

Method of teaching grammar as an essential factor in all teaching.

Three things under this hypothesis are absolutely necessary:

(1) That pupils have continuous opportunities to exercise the highest powers of the mind of which they are capable upon the central subjects of study; that the sole aim of the teacher be the exercise of the reasoning faculties and all the other faculties which make sound reasoning possible.

(2) That pupils be led to express what they think by speech and writing; that writing be made very nearly as common a mode of expression as speech.

Correct language.

(3) That the teacher make sure that the language used in both speech and writing is correct, that it conforms strictly to the rules of best usage.

The child's incorrect use of language.

The child, when he enters school, may have acquired inaccuracies in speech by imitation of patterns at home. There is only one feasible plan for changing these incorrect habits, and that is by giving him countless opportunities of using the correct forms, supplemented by hearing and reading the best literature and language. Good, and even elegant language used by the teacher, whose

keen sensitive ear and quick sharp eye detect and correct at once the slightest mistake, is worth more as a means of teaching than the best text-book on grammar ever made.

Rules, definitions, parsing, and analysis.

The pertinent questions just here are: When, by this plan, should the accidents of grammar be introduced? When should definitions, rules of syntax, and the like, be taught? What place have parsing and analysis in this scheme? One comprehensive answer may be given to all these questions: *Whenever and wherever, throughout the course, a part of speech, a fact of etymology, a definition, explanation, rule, or general direction, a lesson in parsing or analysis, will directly assist pupils in comprehending or adequately expressing thought, any and every detail of grammar should be freely presented and freely used.*

The necessities in the evolution of thought and language should determine in detail the use of grammar. Some suggestions in this direction may be given:

Order of teaching the accidents of grammar.

(1) Proper nouns may be taught with the use of capitals.

(2) When it assists mental action to know objects in classes, the common nouns may be taught.

(3) The plurals of nouns and the possessive case are properly adjuncts of spelling, and are to be taught incidentally as the spelling of the word is taught, namely, by use and without calling attention as if things apart or particularly difficult.

(4) Pronouns may be taught by using them in writing original sentences.

(5) Irregular verbs may be made a matter of spelling.

(6) Rules of syntax, in certain cases, may be

profitably explained and learned when they are violated in speech and writing.

Use of parsing and analysis.

Parsing and analysis have very little to do directly with expression. Analysis, especially, may be used throughout the course as an excellent means of comprehending printed language, providing always that the language is worth comprehending and is directly correlated to the subjects studied. The power to read and study text with intensity, to understand quickly and thoroughly, is of the first importance. Analysis, properly used, will enhance this power.

Economy of plan.

The great economy of the plan here briefly outlined is apparent:

(1) The time and energy of pupils are expended upon intrinsic or educative thinking.

(2) Language, both spoken and written, with all the forms of pronunciation, spelling, punctuation, capitalization, etymology, and syntax, is acquired under the immediate impulses of educative mental action, every act of expression reacting and strengthening thought.

(3) Both writing and speech are made the effective means, in all grades, of learning to read and of cultivating the power to understand the printed page.

Writing, I have already argued, is the best possible means of teaching the first steps in reading; next to writing as an efficient means of developing the power to read, is speech or oral reading. Oral reading differs from ordinary speech only in the use of the words of another; the chief difficulty in the use of the writings of an author lies wholly in the peculiarity of idiom,—the spon-

Oral reading.

taneous factors of speech, rhythm and emphasis, remain the same.

The *motive* in oral reading is the main thing to be cultivated; it consists in developing a strong controlling desire on the part of the oral reader to make others understand his thought. This motive should dominate all action in reading. The method of oral reading should be directed entirely from the standpoint of motive, which standpoint should determine all criticism. The one question from first to last is, Do you make yourself understood? Pronunciation, emphasis, attitude of the body, in fact everything, should be controlled by this motive; without it, there can be no effective teaching of oral reading. The end and aim of oral reading is to sink the mind into the thought to such an extent that the action in reading becomes unconscious and automatic. When a criticism, however, brings attention to a fault, that fault should always be in relation to the effectiveness of the reading in the minds of the hearers. The intellectual purpose of oral reading is, as in all the other modes of expression, to enhance thought in the mind of the reader. The demand for oral reading should be a demand for intensity of thought action. Under the motive of making others understand, the thought action will be enhanced—become more intense. The attitude of the body is controlled by the motive and thus strengthens the expression; and the reaction of the expression, in turn, intensifies the thought.

Motive in oral reading.

Criticism of reading.

Function of oral reading.

If, however, the reader's motive is to pronounce words, the ethical is lost sight of. If the intellectual action consists of mere correspondences to the forms of the words, there is no adequate intellect-

Bad effects of divorcing words from thought.

ual action; the whole being is controlled by one purpose,—the pronunciation of words. The attitude of the body is constrained and made tense when it should be absolutely free and supple; the mind is constrained, unity of action prevented, and energy wasted. To sum up the whole matter, the serious fault in the teaching of reading *consists in making oral reading an end in itself.*

Is it possible to preserve the child's beauty of speech?

Is it possible to carry over the child's beauty and perfection of speech to his utterance of thought in oral reading? If we take the history of the past in reading, this question will be answered in the negative; under the prevailing methods there must be much purely mechanical work done before the child is able to express orally, in the idiom of the author, the thought aroused by the printed page. It is held that it is absolutely necessary to go through a process of mechanical utterances in order that the child may become able to express printed thought orally. Leaving in abeyance any mistakes the child makes through defective speech and models which he imitates, the child's voice is well-nigh perfection. No human being in ordinary speech makes mistakes in emphasis. In a child's voice, the unity of action is absolute; its rhythm, melody, harmony, and emphasis are well-nigh perfect, because of the unconsciousness of the child in regard to forms of expression. His speech is the result of automatic action. This freedom of action is obstructed by the alphabetic, phonic, and phonetic methods, in fact by any and all devices by which the child's attention is directed consciously to the forms of the words and their analysis.

The child unconscious of forms of expression.

I have shown in the discussion of reading that

this obstruction is entirely unnecessary; in fact, it is the antipodes of the laws of mental action. A child can be trained to look at a sentence and read it orally with the greatest ease. By following one rule in teaching oral reading, the unconscious beauty of automatic speech may be preserved; never require a child to read anything that is not intensely interesting to him, *and never allow a child to read a sentence orally until he has the thought.* By following this simple rule, the freshness and vigor of the voice may be maintained and the expression of oral reading have its fullest effect upon thought itself.

Fundamental rule for teaching oral reading.

If the unity of action in oral reading is once broken, can it ever be restored? This is a question that elocutionists have vainly endeavored to answer. There is no doubt that much may be effected by proper methods, but still the fact remains that there can never be a complete restoration of true freedom in expression if in the first year of a child's training in the art of oral reading his conscious activities are absorbed in the forms of words.

Can broken unity of action be restored?

The value of the oral language when properly used as a means of developing mental power cannot well be overestimated.

Probably the most effective use of language in teaching is *questioning.* A question is a direct means of awakening in consciousness certain definite activities. A teacher watches with great closeness the action of the pupil's mind. This action is watched by means of oral expression. A question quickens that action, corrects any mistake, leads a pupil to concentrate more closely upon the subject. If the pupils use words that they do not under-

Art of questioning.

stand, a right question immediately makes them aware of that fact. Questions are used to relate thought. The teacher should always have a definite purpose; that purpose generally stated is to lead the pupils to make original inferences. If by the answer the proper inference is not made, it may be that the pupils have not observed enough, have not read enough to make the inference; then the question leads them to desire to make further investigation. Questioning is a mighty power in the hands of the teacher, if properly conducted. A good question is one that arouses the right desire in the minds of the pupils, and leads to intensity of thought.

Conclusion.

In concluding these discussions of the modes of expression and their educational values, allow me to say that the principal obstruction in the acquisition of forms of expression in all the modes, is caused by an over-estimation of the seeming difficulties presented in the acquisition of skill and technique. Methods of teaching expression, to-day, are replete with formal details to be overcome with little or no regard to the powerful impulses of intrinsic thought. When the vast resources of the central subjects and their auxiliaries are scientifically used for personal development, and practice in each and every mode of expression is brought to bear upon thought intensity, skill and technique will be acquired with great facility.

XIV.

SCHOOL GOVERNMENT AND MORAL TRAINING.

THE purpose of a school is educative work. By educative work is meant self-effort in the direction of personal development. School order is that state or condition of a school in which the best educative work is done in the most economical manner. The process of education consists in presenting conditions for educative acts on the part of the individual. Method is the special adaptation of educative conditions to individual needs. Teaching is the presentation of conditions for educative self-effort. Training of the body consists in the presentation of conditions which develop the body, and make it a more efficient means of receiving and manifesting thought.

Purpose of school.

Method.

Teaching and training.

A school is a community; community life is indispensable to mental and moral growth. If the act of an individual in any way hinder the best work of the community, he is in the wrong. The highest duty of the individual is to contribute all in his power to the best good of all. This principle is the sure guide to all rules and regulations of a school. How much noise shall there be in the school? Just enough to assist each and all to do their best work. How quiet shall it be? Just quiet enough to assist each and all to do their best work. How much whispering? What shall

Community life.

be the rules for coming in and going out? For punctuality? Every rule of a school, in order that it may be of educative influence and be felt to be right by each pupil, consists in carrying out this motto—"Everything to help and nothing to hinder." The first essential to true manhood is to feel the dignity of life, and that dignity comes from a sense of responsibility for the conduct of others.

Fundamental rule of order.

Test of a school.

There is but one test, one genuine test, of a school, which may be explained by two questions: First, is every individual in this school doing educative work in the most economical way? Second, is that work the best for the whole, and at the same time the best for each individual? If the answer to these questions is in the affirmative in regard to any school, then it can be said to be in order. The perfect ideal of order is that each and every minute shall be filled with that work which best assists each and all in growth and development.

Initial steps in order.

The initial steps in inducing the government here defined are indeed the most difficult. Children enter school with marked habits of inattention, with a cultivated dislike for work, and frequently with the feeling that the teacher is their natural enemy. The question, then, of first importance is, How can habits of work or self-effort be induced? This question cannot be easily answered, but certain marked factors in it may be mentioned. The highest qualification of a teacher is a dominating love for children, manifested by a strong desire to assist them. The second qualification, an outcome of the first, is that a teacher must be deeply in love with the subjects of study; in other words, must be a persistent, close student

Highest cultivation of a teacher.

of the subjects taught. Third, he must have power and skill in the manifestation of thought. And, fourth, he must have the courage of his convictions.

Courage.

It is common to humanity to worship power, and children, above all other persons, have this inborn tendency. A teacher who has a high grade of skill in singing, in drawing, in oral reading,— in fact a skill in any or all the modes of expression,—has a rare opportunity to initiate and cultivate habits of work on the part of pupils. The influence of the teacher's personality, moral and intellectual power, and skill, never can be overestimated ; every act of the teacher is perpetuated in the conduct of his pupils.

Skill.

A knowledge of each pupil's individuality, gained by intuition and the study of psychology, is a necessity with a teacher. Tact on the part of a teacher, means the presentation of conditions adapted to the individual effort. Next to tact, and dominated by it, comes the courage which is born of a high ideal, great love for children, a clear conception of what they need in growth, and the power and persistence in a skilful presentation of the right conditions. Children feel and admire courage in a teacher. Courage manifests itself in quietness, in poise, in the appearance of reserve force, never threatening and never yielding to wrong. Children know instinctively, from a short study of a teacher, what stands before them in the way of work. The highest duty of a teacher is to direct the energies of the pupils, and to this task he must address himself from the outset.

Knowledge of the individual.

Tact.

One very important suggestion may here be made. A teacher should never lose a moment's

Trivialities. time in trivial things, but go directly to the most interesting work. Children, however indifferent they may be at first, soon appreciate a demand for educative work. Prejudices and purposes which tend to disorder may be overcome by an immediate demand on the part of the teacher for such action as will lead the pupils to forget all their bad intentions. No matter how much courage or intuitive tact and skill a teacher may have, if the

Work. children are not led immediately to work, if the conditions are not adapted to the absorption of the mental and moral powers of the child, then control must be gained by arbitrary means.

Order defined. Order limits personal energy to educative work. Educative work is that self-effort needed for the education of the whole being; body, mind, and soul. This question still remains, and will remain as an everlasting and unsolved problem: What is the work which educates? One general answer may be given: The exercise of the mind in the acquisition of that knowledge most needed for personal power and present use.

Selection of subjects. But knowledge is boundless, and your pupils can get but a drop of the ocean. What knowledge shall you present them in the years you have them under your care and guidance? What rule shall govern you in the selection? The answers are not far to seek: your selections can be entirely governed by what each individual pupil needs for his personal development. He needs that knowledge which will enable him to best serve the school and world. The two answers are one: the needs of the school and the world are the needs of the individual.

History. The child should study history. Why? Because history is the record of the struggle of the

human spirit to acquire freedom. He is to go through a like struggle if he would be free. History is the path to freedom, over miseries untold, over battle-fields, over wretchedness and woe. The child is the inheritor of the experience of the past, and history presents him with that inheritance. This rich inheritance is to be given to all; the child may be a mediator. Who can understand history without the love of all mankind in his soul? Love is an interpreter of history.

True patriotism.

Much is said about the development of patriotism in a child, and much more should be said. There is a kind of patriotism which may be called family love, and which limits efforts to the good of the family alone. There is another kind of patriotism which limits efforts to the community in which one lives, without regard to the good of others. There is a national patriotism, a love of one's own country, by which one's actions are controlled, in which the main question is, What is the immediate good of my people? But, under the light of truth, under the highest ethical motives there is no patriotism in this world worthy the name, no true religion, that does not embrace every child born under the shining sun. And in proportion as this motive controls the being, so will be the desire to study and know more of all humanity, its past history, its present conditions, its prospects for the future. Indeed, history, properly studied, has for its product a deep and profound sympathy throughout with the struggles of mankind for higher conditions.

Selection of subjects in history.

But history is vast and time is short: what particular history should a child study in the eight years? The history of American life, and the

genius of American liberty: not, indeed, the history that dates from 1776 or 1492, but that history which reaches away to the Magna Charta, to republican Rome, to Greece, to the hills of Palestine, to all the heroes and martyrs who have lived and died to make men free. The child should be led to feel the heart-beats of liberty in all ages; to feel in his soul the pricelessness of his inheritance; that he is bought with a price—the suffering and blood of untold millions. Why? That he may feel the responsibility of living; that he may put himself, a holy influence, into human life; that he may understand when he casts a ballot that he is choosing the right for his people and for the world.

History properly taught joins the individual to the whole race, past and present, with bonds of sympathy and love. One can learn in no other way than by the unprejudiced study of history the breadth and depth of Christ's words: "Blessed are the merciful, for they shall obtain mercy."

Biography. Biography should instil lofty motives, high aims, and the duty of heroic action. The student who knows something of the past, and from its lessons draws righteous inferences, is able to judge more correctly of the present needs of humanity. The immediate outcome of the study of history can be applied every hour in the community life of the school. What subjects in history should be selected? Those subjects that have the strongest influence over right action in the schoolroom, in the home, and in the life.

Science. Why should children study science? History is the path but science is the guide to freedom. Let it be remembered that science is the knowl-

edge of creation, and therefore of the Creator. The application of science is the economizing of energy, the secret of all progress. What science does a child need? That science which makes home better—better cooking, plumbing, better air—and improves all the means of health and sanitation; that science which improves the fertility of the soil; which binds a nation together—nay, the world—by railroads and electric wires; which can be put to immediate and continual use. Science gives us inspiration, because it presents the means for a higher condition or development in the light of true motive. "All are needed by each one," and it can no longer be argued that the development of motive is narrow; it is as broad as humanity, as deep as the ocean of truth, as high as the throne of God.

Selection of subjects in science.

It is the present, the immediate use of knowledge acquired, that arouses in children the highest zest for learning. The adaptation of subjects to immediate practical needs is the sure guide to the selection of materials in the teaching of elementary science: the weather of each day, the vegetation of Spring, Summer, and Autumn, the needs of Winter, the geography of home, in fact the earth that pupils walk on, the air they breathe, the water they drink, their food and clothing, present an endless number of interesting and profitable subjects. In every lesson function or use leads the way. The lesson of lessons the child will learn is that God gives the universe to man, and regulates it by loving laws. Science is the essential means of cultivating an intelligent and all-controlling love for the Creator.

Immediate use of knowledge.

Civics, when properly taught, enters into the

Civics.

child's life as a most essential factor; it is the science of mutual relations and duties. The little community called the school represents the best possible conditions for the cultivation of these relations and duties. There is never an hour in schoolroom life that does not call for positive exercise of every article in the positive code of morals universally acceded to by mankind. Why should a pupil study with all his might? Because his own example in work has the highest influence for good over others. The individual should feel that there is no means more potent by which to influence others than by doing that which is given him to do, in the best possible way. His perseverance, his struggle in overcoming difficulties, all have the strongest power to induce the same earnestness and zeal in others. Why should he desist from making undue noise, from distracting the attention of others, and preventing them from doing their best work? The answer is plain: He is hindering the work of the whole school. Why should he not whisper? Why should he be punctual and prompt? Why should he march with a quick step? Why should he be attentive to every word of the teacher? The feeling on the part of the child will be perfect if right conditions are presented in this direction; if he can be made to fully realize his relation to others and the rights of others.

Mutual influence.

Class recitation

In a class recitation the teacher is there to present conditions for educative efforts on the part of each pupil; he watches every mental act with absorbing interest; he is very careful not to allow his own prejudgments to interfere with free mental action of his pupils, still holding them, how-

ever, strictly to the subject in hand. In open discussions individuality will show itself in a strong light: no two pupils will think alike, have the same concepts, or draw identical inferences. The chief value of a recitation consists in each individual contributing his mite of self-effort for the good of all, attrition of mind with mind changing and modifying the point of view. *A teacher who is a genuine student will receive far more from his pupils than he gives—just as a reflection of a landscape will bring out points and perfections that are not felt in the general outlook.* The sole motive of the teacher is to assist each pupil to put forth his highest efforts; and that which is true of the teacher is just as true of the pupil, whose sole motive is to assist all his mates in the best possible way, to present clearly and forcibly the side of the question that peculiarly appeals to his mind. This is and will be possible under the right conditions; but, *per contra*, when pupils are reciting for a mark, a per cent, a promotion, or to surpass others, their thinking powers are lamed and crippled, and their best energies are wasted. In the former mode of recitation there is a consensus of opinion, a comparison of views brought about by a determined search for the truth, in which all earnestly participate. The effect of such a recitation is independent study, arousing interest and directing economical research. School life can thus be made ideal life,—a unity of individual lives under one purpose, that of interesting, educative, and therefore profitable work.

Motive of the teacher.

Effects of recitation.

The predominant condition, then, for moral training is community life, the society of the

Conditions for moral training.

school. The social factor in education stands far above all other factors,—higher than principles, methods, subjects, and even the teacher. It is not possible to educate a child at home by private tutors. "The greatest study of mankind is man." By attrition of mind with mind, knowledge of other characters, perception of weakness and strength, feeling of duty, generous competition, unselfish giving of one's self for the good of the community, the child acquires lessons more necessary to his well-being than by all of his book lessons in themselves.

Glory of the common schools.

The inestimable glory of the *common* school is that it contains all the necessary factors of an embryonic democracy. With the altruistic motive controlling the teacher and his methods, the conditions are perfect. Here measures and gauges of history are acquired by actual experience; here civics is essentially practised: the roots of after-life, the springs of action, are all here. Home is the centre; the church makes home better; but the common school is the place where the lessons gained in both may be essentially practised. Here classes learn to respect each other; the children of the rich and the poor; the intelligent and the ignorant are fused and blended by mutual action and mutual love. The common schools present a perfect means of moral training; order, work, and play all tending to the cultivation of true manhood.

Ethics.

Ethical life is ethical action; this action in school is expression under all its modes. The motive and zest of study are found in the mani-

Ethics of sloyd.

festation of thought. This is illustrated by sloyd. Dr. Salomon, its founder, insists that the controlling motive in making any piece of wood-work is the

use of it. The child is controlled by the emotion, —"This is to be for father. This is to be for mother. This is to be for the household." In every cut of his knife, in every observation of his own hand-work, the whole child full of zeal and earnestness is concentred upon the use to be made of the object. If the object is imperfectly made, its function is limited, or fails utterly. Under this guiding motive, steady, prolonged work is the result; difficulties that would otherwise seem insuperable are easily overcome.

That which is true of sloyd is just as true of the other conceptive modes of expression. Art is the fundamental means of *telling the truth*. What words, spoken or written, cannot do, the clay, the brush, the pencil, can do. Art is then an indispensable means of cultivating truth-telling. Any touch of truth in the soul *demands* expression. The pupil feels that his mates are interested in everything he says or does; the teacher is there to accept nothing but his best efforts. Music, speech, writing, making, modeling, painting, and drawing, are at hand, for the manifestation of thought in all its phases. Every act of expression under true teaching is made an ethical act. Every demand for expression is a demand for the discovery of truth.

Telling the truth.

I have thus presented a glimpse of the educative work with which school hours and the hearts of children may be filled. There is not, neither can there be, any cause of disorder, except by lack of work which educates. All truly educative work is interesting; no one can ever study anything that is good without loving it. This statement needs no proof, for truth is the design of both

study and expression; and truth is sweet, pure, and beautiful.

Order and moral training identical.

True order and moral training are evidently one and the same thing, so that any discussion of moral training comprehends the discussion of school government. I shall not attempt to give anything like a comprehensive definition of morality; my sole purpose is to show that the school is one continuous opportunity for righteous action.

Working hypothesis of moral training.

A working hypothesis is as necessary to a discussion of moral training as it is to any other process of reasoning. This working hypothesis I find in the *design* of the human being. I shall take it for granted that the human being was created and designed for the exercise of the highest moral power; that in each individual there are germs of the divine; and that all education is the outworking of this design of God. However much evil there may be in heredity, however much there may be in the little child that is abnormal, notwithstanding tendencies that seemingly point toward evil, I shall take it for granted that the predominating tendencies of a human being are intrinsically moral, and that education consists entirely in the *presentation of conditions for the exercise and outworking of moral power*. Therefore moral training, which comprehends all education, consists in that teaching and training which leads to the designed development of the child; the realization of possibilities for good and growth. If this hypothesis be granted, that education is the outworking of the design of God into highest character, into highest possibilities of individual development, then all education is, in itself, intrinsically moral. I repeat that edu-

Realization of possibilities.

cation is the outworking of God's design into character; that all education is by self-effort; that the process of education consists in presenting the right conditions for personal self-effort; and that every self-effort that moves toward the outworking of the *design* is intrinsically right. Method is the perfect adaptation of conditions to self-effort, and therefore natural * method is in itself moral. **Character.**

Education involves the adaptation and presentation of *all* the conditions needed for personal development; therefore any embodiment of these conditions in a course of study, for instance, is a system of morality and ethics. There is absolutely no separation of intellectual and moral power in education. Morality is the *direction* of mental power, is the movement of the being upward. **No separation of intellectual and moral training.**

We will suppose—something which is generally believed and very little practised—that all growth is by law, by the laws of the Creator. Method consists in the adaptation of the conditions necessary for the educative action of the whole being; in other words, method is the special adaptation of those conditions which bring about the highest action of law. Certainly self-effort in the direction of growth is moral, and method has for its sole purpose the right direction of self-effort. Natural method is the exact adaptation of subjects to the action of law; therefore natural method must be in the highest degree moral. **Law and morals.** **Morality of method.**

I shall also take for a working hypothesis that education consists wholly and entirely in the cultivation of the altruistic motive; the motive without which religion is a delusion; the motive **The altruistic motive.**

* Conformity to law.

presented in the life and words of Christ; the motive of making one's own life and character of the greatest possible benefit to the eternity of mankind. Although this motive is fully recognized as the central principle of all religions worthy the name, still a practical belief in it is in abeyance; indeed, philosophy has been invoked to deny that the highest mission of man is universal salvation. Personal happiness is defined as the goal of life by the utilitarians, and they present a strong argument in favor of their proposition.

The utilitarian doctrine.

I take issue squarely with this, and call your attention to a few arguments that have fully convinced me that the development of the altruistic motive is the end and aim of education. *Vox populi, vox Dei* is true of a civilized people after a long interval between deeds and final judgments. Beyond the blinding glare of famous lives you will find one common standard of judgment — how much love, how much self-abnegation, how much self-sacrifice for the good of family, the state, the nation, and the world? The memory of Alexander, Cæsar, Napoleon,—although they were indirectly of great use in progress, and all honor is given them,— is cold and dead in human hearts; while the exalted lives of Socrates, Pestalozzi, Froebel, Horace Mann, John Bright, Florence Nightingale, Washington, and the greatest of all, Abraham Lincoln, will ever be bright and pure, the beacon-lights of mankind. If we could discover a scintilla of selfishness in Christ we should reject him. Great force of character or genius, combined with selfishness, inordinate ambition, and all-controlling avarice, leads, often to great political power, to wealth, to bloody victories, but beyond it cannot

Vox populi, vox Dei.

Limits of selfishness.

lead. There never was a bit of true art, music, song, painting, sculpture, or poetry, destined to immortality, that did not spring from inspiration born of love.

Education and the altruistic motive.

"If the altruistic motive assumes entire control," you exclaim, "what is to become of self and self-interest?" "What of knowledge, of physical training, of personal success? Does not self-abnegation mean the giving up of self?" Find answer, perfect assurance, and the "peace that passeth all understanding" in the divine paradox: "He who would save his life must lose it." There is no incentive, no impulse, no spur equal to this sublime assertion. Persistence, endurance, martyrdom, death, the salvation of man, all possibilities of life here and hereafter, are comprehended under it.

All truth is needed by man.

All the truth in the world ever transmuted to knowledge by human minds is needed by man. Search for truth gives man power; its application raises the possibilities of the seeking for truth to higher levels. The transcendent motive for the search for knowledge is the clear vision of mankind needing and waiting its application. Knowledge is sweet in itself, "sweeter than honey and the honeycomb;" but the discovery of truth reaches its sublime height when the discoverer feels in his heart of hearts that this is for the dying world, this is for "the millions yet to be," this is for time and eternity.

The development of motive is education.

Thus in developing motive we develop everything; motive is the centre, and everything comes to it. It is the application of the profound principle of the Great Teacher—"Seek ye first the kingdom of God and His righteousness, and all

things shall be added unto you." Inspiration comes only with motive. Look down the ages, and for every great act of self-abnegation, for every great self-sacrifice, for every thought that lives and burns in the hearts of men, you will find the motive of love to mankind. It is preached from every pulpit; emphasized in prayer-meeting; taught in Sunday-schools; practised—where?

That which is the consensus of human judgment, that which is the essence of all divine revelation, should be the centre of the education of children. Children enter the kindergarten or school with their souls too often clouded by "home-made" selfishness; but long experience proves that the moment they mingle with a community, the deep interest in others, which is spontaneous in all children, may be easily directed by skilful teachers into a desire to help others. Nothing appeals more strongly to a child than the idea that he can be of use to his mates. This germ is easily developed into a strong controlling motive, a habit of living. At what point in school life will selfishness enter? I answer without qualification, just where it is cultivated!

Altruistic motive appeals to the child.

The power to choose the truth and apply it is the highest gift of God to man. "The truth shall make you free" means that, given the right conditions, the human soul will find that tentative truth which is best for itself. The controlling authorities of past and even present civilizations have everlastingly denied the right of man to exercise his reasoning faculties in all directions; in this denial is the inner secret of human misery. Every step onward in civilization is dependent upon finding and applying the truth. Every step

"The truth shall make you free."

in personal development is through original inference and its practical application. No human being can find the truth for another; the highest aim should be to discover *conditions* that will enable others to reason in the right direction. The command is, "work out your *own* salvation." Reason is the supreme faculty of the being; its proper exercise is the direct purpose of all teaching. Teaching consists in the presentation of the best conditions for the exercise of judgment.

Teaching.

Ideally, the child should choose only the right, and therefore should have only the conditions of right choosing presented. Nothing but the right should ever be presented to the child. The old teaching of evil, so that by knowing evil the child may avoid it, is fundamentally and everlastingly wrong—pernicious to the last degree. Evil is negative, good is positive. The good is true, and the good is beautiful; and nothing but the true, the beautiful, and the good should ever be presented to the child. The principle so often enunciated, that a child should never see a wrong form, should never make a wrong form, is to be applied in all directions. A child should never have anything presented to him that is not in itself beautiful. He should learn to lift his eyes to the true and the good, as the flowers do to the sunlight. But how will the child know the evil if good is always presented? is the pertinent question of some inquiring teacher. He will know all of evil that is necessary for him to know by the shade that it casts over the good; he will be educated above its temptations by the positive root of good in himself; when evil offends the taste and does not arouse inclination or desire, it has lost its

Choice.

Present nothing but good.

most potent influence. If the love, and therefore the desire, for the true, the good, and the beautiful is "throughly informed" in the child, the abnormal has lost its power; it is felt at once to be a counterfeit, and who will ever knowingly choose a makeshift when the real thing can be had without money and without price?

Detection of counterfeit coins.

It is said that in China, where there are countless coins of different kinds, counterfeiting is prevalent, and experts are carefully trained to detect bad coins. This is accomplished by requiring them to handle for three or more years good coins, and when thus trained they detect counterfeits instantly. This illustrates a fundamental principle: spend no time in presenting the wrong; always present the right and the true. Furthermore, present it for the choice of the child. Evil will always come of itself; evil is accidental, ever present, a negation for every right deed. When evil comes and the child has no light by which to detect it, then present the positive and let the child choose. Good is always predominant, good is always beautiful, and the nature of the child, where the training has been in any degree normal, inevitably gravitates toward good, when given the opportunity.

Training of the will.

The training of choice through reason is the training of will, the great executive of the ego; indeed, it is impossible to analyze the *ego* without the will. The will is that which is behind every action, thought, or expression of the human being. The will controls attention, reflection, the acts of expression, and indeed the whole being. The will is the executive of the *ego;* there is no act of the *ego,* good or bad, without simultaneous act of the will.

Motive controls, reason chooses, will executes. Will is self-effort; teaching and training present the conditions for self-effort. Motive without execution dies; therefore next to motive in education stands the training of the will by educative work. Habits of reason, continuity of action in one direction, patience, persistence, courage, self-control, are formed by the exercise of the will, exercise in actual *doing of that which is to be done.* Training of the will leads to prolonged, persevering, independent struggles to overcome obstacles, to find and apply the truth.

The will trained by doing.

The value of an act of the will consists entirely in its content, or, in other words, the *direction* of the action determines the power acquired. Teaching has for its central purpose the training of attention. Attention is that power of the being to hold itself in the best possible attitude for the action of external attributes. In observation, the object acts directly upon consciousness; its value consists in the value of the correspondence to the object acting. In hearing-language and reading, words act directly upon consciousness like other objects; but the value of these acts depends entirely upon the appropriate activities aroused. The will is exercised in observation, hearing-language, and reading.

The value of an act of the will.

Attention.

Through attention the subjects and objects of thought are presented. The subjects and objects are to be in themselves educative, and are to be adapted to the immediate capabilities of the mind, by method. The most effective discipline is acquired by the action of the being upon those conscious activities needed for the immediate stage or step of personal development. To step

outside of this rule, for means of discipline, is to grant that there is not sufficient intrinsic truth for the exercise and training of the will. Acts of attention should be essentially moral acts. Reading and the study of text should be limited to the sweetest, purest, most invigorating literature; observation, to the investigation of nature's laws; the teacher's language should be the guide to, and inspiration for, educative work.

Literature.

Exercises in expression.

Exercises in expression under each and all the modes, if properly conducted, train the will as in no other way. In the conceptive modes, the action must be steady, continuous, and prolonged; there is an ideal to be realized by action; the concept must be held in consciousness, the hand must be controlled by the will.

Imagination.

Imagination is the *heart* of the being; the images that occupy the mind and control the desires make man's destiny. Out of imagination springs the ideal which guides and dominates. "The pure in heart shall see God." Purity of heart is a pure imagination. The content of imagination should be the reflections of truth. Nature is as pure as her laws; literature should be pure. Teaching has for its main function the cultivation of the creative power of the mind. Imagination is the norm of creation. Observation prepares for the exercise of the imagination, reading exercises it, study intensifies it. What a child's imagination will be is determined by the subjects and methods of his thought and its expression.

In the education of the child the formulation of moral precepts should be the outcome of his own reflection and experience: they will and

should come very slowly through induction the outcome of ethical action. Moral training consists in the presentation of effective conditions for virtuous deeds. The laws of action, or the principles of right doing, should grow out of the *doing* itself. The ideal of the school is that all action is positively moral. Keep the child unconscious of motive, of the goodness of his own movements, just as long as possible. "The kingdom of heaven cometh not with observation." Should there be a certain portion of time devoted to morals? Should there be text-books in that direction? *All teaching should be intrinsically moral, and all good books are text-books of morals.*

Keep the child unconscious of his motive.

Text-books of morals.

History, the account of the human spirit, striving through long ages to find the truth; biography, the record of the lives of men and women who have lived and died for humanity; pure literature, the reflection of noble souls and the interpretation of nature; myth, the fire-mist of religion; civics, the science of community life; science, the search for the natural laws revealed through the universe by the All-loving; mathematics, the weighing and measuring His work: all are moral,—shall I say religious? What is the need of formal lessons in morals below the university, where ethics as a science can be studied intelligently and comprehensively?

The demand for teaching morals as an isolated subject springs from the absence of moral effects in all other teaching. If, however, moral precepts are not to be used as guides to action, what are true means of inducing moral and ethical effort? I answer, the *feeling* of righteousness, caused by educative acts. I have already illustrated this,

Feeling of righteousness.

under education of motive. The child at home *feels* that it is right to do what he sees done by his parents: the girl wants to cook, to sew, to sweep, and to keep house; the boy, to buy and to sell, to make useful articles, to drive the horse, to mow, to plough: in fact, all attempts at imitation are made under this feeling. In sloyd, the pupil *feels* that it is right to make some article of house furniture, some apparatus which he is to use in experiments. This motive unifies mental and physical action; he puts his whole mind upon the work, brings to bear all his skill, because the article when properly finished is to be of use. In the same work, form and number are acquired; they are necessities in making. All this is essentially moral, because of the strong feeling of right which a child experiences when using all his powers to discover a truth adapted to his present condition. The delight felt in original inference, and in the collecting of data necessary to the exercise of judgment, is a sweet and wholesome emotion, which, constantly induced, will bring lasting good to the child.

Sloyd.

Delight in expression.

In the free expression of thought on the part of children there is continual pleasure. They will speak, write, model, paint, draw, and sing with great confidence and delight. This sense of right doing is the true interest by which mental energy may be used for its best outcome. The child lives in the present; immediately anticipated pleasure may enchant him; but his experience is so limited that he can have little judgment in regard to the future value of his studies.

The feeling of right and of interest is the fruitful germ of anticipated pleasure; the day will

come to him when faith in the future will compel him to long continuous struggles in study and work. It is too often urged that a child should be given hard dry tasks, or discipline studies, in order to prepare him for close and prolonged application. Nothing can be farther from the truth: if in youth the child has felt the warm glow of interest in all his school-work, the spark engendered will brighten into an enduring flame, will become the inspiration of long years spent in unremitting study.

Interest gives zest to life.

It is impossible to discuss one faculty of the mind without including all. We can say with truth that the proper development of motive, will, or reason is education; one cannot be trained without the others; each is involved in all. That faculty of the mind which has the dominant influence in deciding motive and directing the will is emotion. Joy, happiness, interest, are different names for the same thing in kind; they are synonyms for pleasurable, agreeable, healthful emotions. I need not pause to discuss the inestimable blessing happiness is to man; life devoid of pleasure is worthless. My purpose is to discuss the fundamental principle of true happiness and the method by which it may be cultivated. Permanent happiness is the result of continuous, persistent self-efforts in the normal, all-sided development of the body, mind, and soul. The most effective self-efforts are only possible under the highest motives; therefore happiness is the product of doing the greatest amount of good for humanity.

Mental faculties.

Emotions.

The two statements are one in content and meaning: education presents the means for the full exercise of the laws of personal development,

of which self-activity is the central factor. The emotions of pleasure excited by the most economical and therefore the most effective self-effort in the line of self-needs are right—the healthiest, strongest, and most enduring. Emotion is the immediate result of thought; the higher or the more educative the thought, the more intense will be the emotion. The supreme mental act is that of original inference, or the mind in action, searching for law. Original inference is conditioned upon data or knowledge of facts; insufficiency of data makes correct inferences or judgments impossible.

Emotions of pleasure.

The central factor of class teaching consists in watching with great closeness the mind of each pupil. Teaching, you will remember, is presenting conditions for educative mental action. In order to judge of the conditions to be immediately presented, just the state of the pupil's mind must be known. The standpoint of the teacher's judgment of mental action dominates that action. There is but one true standpoint, and that is of the power of original inference. Original inference is the highest test of that knowledge which is power. If the knowledge is wrong or insufficient, the inference will be wrong. By a skilful question or suggestion the pupil is made to see mistakes, and by the same token is driven to revise his data or seek for new facts. A demand for inference is a demand for knowledge, and at the same time points to the facts to be acquired; facts are the eyes through which we see laws.

Watch the child's mind.

Original influence the test of mental power.

Science is acquired by a series of inferences, a process of reasoning, classification, and generalization. A new inference, then, is based upon all previous facts and inferences. Science is an organi-

Relation of original inference to knowledge.

cally related body of generalizations derived from facts; inferences broaden and deepen at every step, and clearer and more comprehensive generalizations spring from the knowledge of relations of sciences to each other. The effort in original inference demands related knowledge, or science.

Self-effort in making original inferences is the highest *quality* of mental action. *If the teacher concentrates all his efforts upon quality of action, the quantity of knowledge will take care of itself.* Quality of mental action cannot exist without quantity of knowledge, but quantity may be acquired without the slightest efforts at quality. Quality of mental action is intensity of action; to the conscious centre of quality gravitate all the facts and judgments that have ever existed in the mind. This is a fundamental law of psychology.

Quality of mental action.

Intensity of action.

Original inference exercises the supreme power of the mind—the power to acquire that knowledge which is in itself power. Under this quality action, knowledge becomes a dominant necessity, and is acquired with the greatest possible ease. The exercise of the pupil's minds in processes of reasoning, enables the teacher to sharply discriminate individual power, and to weigh personal attainment. When pupils fail to reason correctly after the best help and repeated efforts, the teacher will understand that they are beyond depth; he must go back to a safe starting-point.

Original inference the measure of power.

But the most prominent feature of this genuine teaching is the *pure delight* pupils will take in the search for truth. That which is best for the unspoiled child gives it the greatest pleasure. The emotion that springs from the search for truth is

Delight in the search for truth.

next to the purest joy in the world—the application of truth for the good of others.

Self-conceit is not possible to one who has a heart open to the truth; the joy of profound humility brought by a glimpse of infinite truth, fills the soul, and leaves no room for egotism.

Opportunities for moral and ethical action.

The possibilities for mental, moral, and ethical action in school are unlimited; opportunities for virtuous deeds are countless. The faculties of the mind are capable of infinite development; true, they await the teachers, as did the mighty stored-up energies of steam, heat, electricity, and sound, their discoverers. When the teachers come, all the marvels of the nineteenth century will sink into insignificance before the full manhood and womanhood of realized possibilities.

If the application of methods that conform to the laws of the being constitutes moral education and leads to ethical action, what shall be said of methods not growing out of and derived from the laws of the being? Are they immoral? This would be far too sweeping, too frightful, an accusation. I will draw up the indictment for your decision:

Are wrong principles and methods immoral?

Incorrect methods.

(1) Methods not adapted to the laws of the being obstruct self-effort, waste the pupil's time, and deprive him of the free use of all his powers.

(2) The learning of dead forms, or symbols without thought, not only wastes the time of children, but cultivates self-conceit, self-consciousness, obstructs the action of imagination, and inhibits reason.

(3) That study of history which demands a belief in the views and prejudices of a narrow-minded author or teacher induces bigotry and

hate. History, taught from the standpoint of a creed, a party, or a nation, is often replete with prejudice and false statements. The one-sided teaching of history narrows the sympathies and shuts the soul from the broadest love of humanity.

(4) The text-book study of science, which consists in the verbatim learning of facts that should be gained by observation, and the memorizing of inferences that should be original, hems in a child's spontaneous activities, and robs him of his love for truth.

(5) Drawing from flat copies, and all mere imitations of copies, weakens the power of observation, and reduces the educative influence of art studies.

(6) Corporal punishment degrades the soul, and makes children cowards.

(7) Rewards, marks, prizes, per-cents, cultivate selfishness and destroy unity of action, making the altruistic motive well-nigh impossible.

(8) When a teacher controls by sheer will-power, reinforced by corporal punishment and rewards, his pupils have no opportunity to exercise their own wills.

Dominating the will.

The latter proposition will possibly be misunderstood, and therefore needs some explanation: the will of the teacher may predominate, that is, the child's will may be nothing but the teacher's will. There are teachers of such strong will-power that they overcome the wills of the children, and so-called order is the product—the order of arbitrary authority, which is in itself frightful disorder. The pupils are still; they study in perfect obedience and under the perfect control of the teacher. If the bare will of the teacher is not strong

enough to accomplish this sad result, then arbitrary means must be used—punishment, reward, or both means of controlling or suppressing any exercise of the child's will, or the formation of habits of self-choice. This order, under the control of the teacher's will, to inexpert eyes seems the proper thing. The room is quiet, the children are busy. Busy with what? Not with educative work, not busy because of interest in the work, filled with the joy of overcoming; but busy because they *must be* out of fear of punishment or hope of reward.

The teacher's will, the child's will.

If the teacher's will is the child's will, and if the child has no feeling of the right of choice, if the habit of choosing is not formed and confirmed in the child, then he becomes will-less, a being to be controlled by others, drifting weakly and helplessly, at the mercy of every strong current that seizes upon him.

Home tyranny.

There are plenty of examples of home tyranny. Parents, though loving their children as only parents can love, often demand unquestioned obedience, and bend the wills of their little ones to a rigid subservience, unenlightened by reason. The broken spirits sullenly obey and silently rebel; the opportunities of liberty are awaited to indulge a helpless will in license, and very often vice.

Unnatural discipline in schools.

I have seen schools in which *discipline* had reached the ultimate. The machinery for the entire subjugation of the will seemed perfect. The pupils stared at the white walls opposite as if their lives depended upon perfect rigidity of muscle. They stood up, recited, sat down, as if moved by springs controlled by electric wires. The teachers exhibited their schools as if wonders

had been accomplished. The poor victims of mistaken education were deprived of all right to exercise the slightest liberty of action, not to speak of reason. When we see a vast multitude of unthinking citizens (?) blindly obeying the orders of a modern tyrant, the political boss, the cause of such awful degradation is not far to seek. Children so trained become the means by which greedy politicians degrade democracy and act for its entire overthrow. The primary gift of God to man is choice; and education should be the presentation of conditions for choice, for the exercise of reason. We may take it whichever way we will, if we say the outcome of education is to be a true citizen, then the citizen's highest influence is right choice for the whole people.

Destroying the power to reason.

Here is the difficulty: the shortest road to so-called order, which is very generally understood to mean stillness and the delusive appearance of educative work, is the result of the *immediate will* of the teacher: the children are *wrenched* into line; they are *forced* into habits of quietness. On the contrary, if the child's will is to be educated, if the order and the industry of the schoolroom is to be the outgrowth of his own self-control and self-interest, there will be, it goes without saying, in the initial steps some apparent disorder; children must have a chance to choose, and given such chance, will exercise the judgment to be expected of such immature minds. If a child commits a crime against the school, an immediate punishment may settle the case and bring quietness, if this is the end to be worked for; but it does not educate the child; he has no choice, he is not led to rule himself, he is compelled to comply through fear.

The short road to order.

Arbitrary force a means of discipline.

I grant at once that there is a time in life when the mother's will should be the child's will; that there is a time in school-work when the teacher's will should be the pupil's will; but any exercise of authority on the part of parent or teacher which does not contain the reason for the order, or any exercise of the will which does not bring the exercise of the child's will to coincide with the parent's or teacher's (and in every instance the child should be made to feel the justice of the demand), is fundamentally wrong; is the perpetuation of that mode of government by which tyranny has kept the spirit of man for ages from seeking and finding the truth; is carrying oppressive and suppressive methods, so effective in the past, into the embryonic democracy, the central hope of freedom, *the common school.*

Reason and will.

Corporal punishment.

In the past, corporal punishment was the principal means of enforcing the will of the teacher. Corporal punishment has for its basis the working hypothesis that children are bad by birth, by nature, and by tendency, and that this badness must be suppressed; that children do not like education or educative work; that it is necessary to discipline the mind through fear. Corporal punishment has for its basis the idea that children will not do right unless they are forced to do it, and because of this the horrible anticipation of continual punishment is placed before them. The child gets his lesson, draws his map, recites, and does his work under the controlling emotion that if he does not do it he will be punished. Few of us who live to-day have any appreciation of how far this principle was carried only a few years back. Some older person can tell the story of

corporal punishment. Oliver Optic (William T. Adams), well known to children, once said to me: "If I left out even the smallest word in my page recitation, an 'and' or a 'the,' I heard the stern call of the master, 'Adams, come to the desk!' and I knew what that meant." "Fear is the beginning of wisdom, but perfect love casteth out fear."

Old-fashioned corporal punishment.

The change from punishment to another great auxiliary to the will of the teacher is reward—presents, prizes, promotions; from an appeal to cowardice, to love of approbation or avarice. The change from fear was the hope of some extraneous reward, some special mark of approbation on the part of the teacher, something that could be heralded as a triumph on the part of the pupil. Bad as corporal punishment has been and is, the substitute of a system of rewards is infinitely worse. Fear of punishment is bad enough, indeed, but the systematic development of selfishness is damnable. The infliction of corporal punishment is degrading to the mind, but the hope of extraneous reward for study destroys the highest motive and sedulously develops its opposite, selfishness. I would place punishment and reward-giving as in the highest degree criminal; as criminal as lying, stealing, or swearing. I know it is not generally understood in this way; but I ask of you, my fellow teachers, to look at it with the greatest care. Why is it that the sordid nature of man is so highly developed in our country? Why is it that man looks upon his fellow man as a means to his own selfish ends? Why is it that we doubt almost every man who seeks for office—doubt whether he loves his country more than he does himself? To-

Method of rewards, per-cents, prizes, and promotions.

day, one of the most prominent products of our schools is the systematic cultivation of selfishness —want of an interest in public welfare, public interests, the best needs of the commonwealth. Do you question this? Study the situation with that courage which dares to doubt!

Cultivation of ambition.

"Would you not cultivate ambition?" some one says. "Are not Webster, Clay, and Calhoun the products of ambition?" Continue the list and include many modern statesmen! Is it not true that if we as citizens could go to the polls and vote for public servants, with a complete or reasonable conviction that our candidates love their country more than they do themselves, we should be profoundly happy?

Were not the few really great men the products of the "old education"? They were certainly saved from that education, *but who can count the lost?* Bought at home, bought at school, with merits, per-cents, and prizes, bought in college and university by the offer of high places, the young man with a *finished* education stands in the world's market-place and cries: "I'm for sale; what will you give for me?"

Educated to sell.

Prize-giving.

What is prize-giving and what the result? Each child is born with personal power. He owes physical, mental, and moral power, and its foundation, not to himself, but to his ancestors, taking strains of strength or weakness from away back in the remote past. One child comes into the world with the inborn power to do incomparably better work than another child. A prize is offered; it is generally known from the beginning that the getting of that prize will be confined to one among two or three children. Prize-giving is the rewarding

of an ancestor; rewarding a child for the virtues and mental power of his great-great-grandfather. A child dimly feels this, and if constantly led to accept honors which come so easily, his sense of justice is warped and blunted; you have developed an aristocrat keenly alive to his own rights, not a citizen regardful of the rights of all. But that is not the worst of it! The child with inborn weakness looks in despair upon the mark of approbation to his mate, and in his despair he sinks, his confidence is gone, his manhood is degraded, and the loss to one soul is a loss to every soul in the community. The only safe thing to reward is self-effort—self-effort measured by the capabilities of the individual. True teaching discriminates individual power. Each child is different in character from all other children; the weakness and strength of each child are understood and appreciated, and then the self-effort is measured by the child's personal capabilities. True, children come into competition with each other, but that competition should be generous, should be the recognition of each other's powers, each other's weaknesses, and a desire to help or to be helped, a mutual giving and taking.

Prize-giving the rewarding of an ancestor.

Prize-giving the despair of weak children.

The same general criticism may be made upon presents and rewards, promotions and rankings. It is a very easy way to arouse abnormal activity on the part of children,—this hope of reward; but it quickens and stimulates undesirable results. A child is dominated by one desire, controlled by one motive,—"I wish to succeed; I am glad when I excel my classmates, when I arrive at the head." The boy rushes home, filled with the joy of a conqueror. He flies into his mother's arms and cries,

Abnormal activity.

"I am at the head of the class! All the others are below me; I have beaten them!" No prayer-meeting, no Christianity, no religion on earth, can eradicate this monstrous tendency of selfishness, which parents and teachers are ignorantly and prayerfully fostering. The cultivation of the reward system in our schools is the cultivation of inordinate ambition, the sinking of every other motive into the one of personal success. The reason why education to-day is looked upon with such narrow views, the reason why the learning of dead forms is forced upon the community, is that selfish man, living for self and in self, effectively excludes inspiration, does not study or care to help the wretchedness and woe of mankind. Men so trained are filled only with an ambition that controls them, narrows them, deprives them of all aspiration and reflection; they live and die for themselves. This is a severe arraignment against reward-giving, so common in our schools; but it is true, and the pity of it is that it is all so *useless*.

Corporal punishment.

Corporal punishment is the enduring power of the old and long-tried method of making man utterly subservient to human authority; it is the living relic of dungeons, torture, police, standing armies, used to force human beings into unreasoning obedience and fixed beliefs; to suppress the divine aspirations of the human soul in its struggles for the liberty to become free.

Reward-giving is bribery.

Reward-giving had its origin in bribing, the buying of a bit of liberty enjoyed in the early republics; its effectual purpose was the re-establishment of despotism.

God gives rewards.

Does not God grant rewards for virtuous deeds? Yes; He alone knows all the circumstances, the

conditions, of individual life. His discrimination of self-effort is perfect: the thief upon the cross received a sweeter reward than the selfish rich man. His reward is love, and the more you give of that the better. School rewards propose to do the impossible—to measure desire, emotion, and motive, to weigh character. There is no scale invented, no measure, however exact, that can give in numbers the value of effort. With effort you must weigh heredity, home surroundings, health, and vitality. All that rewards, per-cents, and prizes can measure is quantity—pages, chapters, and books—learned and recited.

Cause of corporal punishment and rewards.

The only reason for the existence of corporal punishment and rewards is *unnatural, uneducative drudgery*. They are the effective means of quantity-learning along the shortest line of resistance; order and quiet can be easily maintained by fear or reward, and an all-controlling ambition cultivated by the same auxiliaries. I have no hesitation in saying that the development of fear by punishment and selfishness by reward is radically immoral. There is absolutely no necessity for either. Real, genuine educative work, real search for truth and its ethical application, needs no other stimulus. Drudgery must be driven by fear or the unnatural incentive of rewards; but work, all-around educative work, work for the brain and hand, for the mind and body, work that best develops the whole being, work that is most needed by all the members of a school, brings its own sweet, joyous reward.

I shall not wonder if you more than doubt every word I say in regard to this subject; but I ask you to point out a school to me in which the needs of

the whole being are met by perfect conditions. I can point out to you schools by the thousands in which hungry souls are never fed; in which the body shrivels and dwarfs; in which the "three R's" are the idols, worshipped until the soul is prostrated and the faculties benumbed. It is no fancy, no dream of the imagination, that children's souls are starved to death, while the universe is full of the bread of life. The doctrine of total depravity is man's excuse for his ignorance of the divine nature of the child. *The fundamental reason why children do not act right is because they do not have the conditions for right action.*

"Three R's."

Total depravity.

The talk of the Holy Spirit and all the comfort it has given us by the sense of the presence of God in our souls is well; but when it comes to some realization of His truth in nature, His truth in history, the expression of that truth, and its power to make for righteousness, we have absolutely no faith; we are infidels. Even in Sunday-school rewards are offered, dinners are given, and children swell the numbers only to be more strongly educated and fortified in greed and selfishness. Educative work brings its own reward. No one can search for the truth without being touched as with a live coal from an altar. The search for truth brings its own reward. The cry of "Eureka" has rung down the ages from the lips of the searchers for truth and from the hearts of reformers. It is possible that each and every child may quicken with this inspiration, the Holy Spirit of the highest life. Truth is not to be relegated to only the exceptional few; every child on this earth can have the conditions of finding the truth and feeling the truth for himself. "The kingdom of heaven is within you." To doubt

Reward-giving in Sunday-school.

"The kingdom of heaven is within you."

this is to lack faith in the infinite possibilities of human growth, and the infinite means at hand to nourish them. This lack of faith in humanity is the greatest infidelity.

It is not a vision that I have presented; it is not a barren theory. Are there not bounteous means by which human action can be made joyous, exhilarating, both immediate and in anticipation? The answer is yes, and again, yes! The purpose of word-learning is a well-defined purpose to limit the human being to human authority. The purpose of seeking the truth is to find God, the Author of truth, and to be controlled entirely by Him. I have already said that all truth is God's truth. We sometimes make a difference between scientific truth and sacred truth, but there is no difference. God manifests Himself through the universe to human souls. He differentiates His all-efficient energy so that His manifestation may touch every mind from the weakest to the highest, that "he who runs may read."

Scientific truth and sacred truth.

I have argued in previous talks that there is but one study, and that the study of law. All law is truth itself; therefore all search for law must be intrinsically moral in itself. An honest, unprejudiced struggle of the soul to find the truth is a moral action—is only second to the highest moral action, which is the application of truth; therefore I can say with perfect confidence, that all real study is in the highest degree moral, and all application of the truth found, by the manifestation of thought through the different modes, is in the highest degree ethical when controlled by the motive for the good of others. There is nothing in intellectual work or physical exercise that is not

Seeking for the truth is moral training.

in itself intrinsically moral, a moral action at every step.

Special moral training in the schools.

I know that there has been much discussion upon this particular point, and fear has been expressed that there is little or no moral training in our public schools, and a general verdict has been formed that there must be more specific moral training, that text-books with moral precepts and moral directions must be introduced and studied. The solution of this problem is simple and plain: every bit of teaching should be intrinsically moral, and that teaching which has not a moral element in it, that teaching which is not prompted by the highest virtue, is not right teaching, and should be so branded. Special moral training in schools is a suggested remedy for that which need not exist.

Lack of educative work.

The most fruitful cause of all the evils of school life is the *lack of educative work*. Most corporal punishment has its root in the righteous rebellion of children against mind-stupefying and disgusting drudgery. The brightest and best children refuse to toil when they see no reason for it and feel no pleasure in it; rebellion, alas! is their only resource. Prizes, rewards, per-cents, and all the means of stimulating selfishness, and that ambition which ends with self, spring from a profound unbelief that educative work, that right doing, brings its own sweet and sure reward.

Children lost from total neglect.

Children are lost from total neglect. They cry for bread, and we give them a stone. Their whole nature seeks for the truth, and we give them the lie, in dead forms. The greatest proof of the divinity of the child is that he can meet the ignorant methods of parents and teachers, overcome them,

and still persist in goodness. The day is come when the fear of disobedience of a few negatives is not to be the method of the school, when the grand positive precepts of the greatest sermon in the world, the Sermon on the Mount, are to be applied in depth and breadth throughout school life; the centre of that sermon—"Blessed are those who hunger and thirst after righteousness, for they shall be filled." The Saviour said these words because He knew in human souls there is a depth of love and a breadth of desire which, if the right conditions were presented, would be developed into the highest moral and spiritual power.

XV.

SUMMARY OF THE DOCTRINE OF CONCENTRATION.

It has been my purpose in the preceding fourteen talks to present an outline of a theory of concentration as a working hypothesis for investigation and study. I now propose to sum up the principal points in this theory, and to discuss some of the many difficulties in the way of its application.

Summary of the child's spontaneous activities.

First: The being to be developed determines what subjects and what methods shall be used. (*a*) The environment of the child acts upon it and thereby determines the initial steps of all the studies that can ever after be pursued. (*b*) The personality of the being determines also the action of external energies, and their reaction in expression. The spontaneous activities of the child are the sure and safe guides to finding and applying the conditions of education. (*c*) The investigation of instinct, intuition, and spontaneity is the scientific means of ascertaining the methods by which the child is mentally, morally, and physically developed. The laws of the being fix absolutely the conditions and methods of education. (*d*) The application of necessary conditions by perfect methods means the advancement of the being by the shortest line of resistance towards freedom, the goal of human progress. Imperfect methods ob-

Imperfect methods.

struct and deflect these lines of advance. The highest economy in education, therefore, is found in the application of methods that strictly conform to the laws of development.

Second: The subject-matter found in the child's environment, to be used in its development, is classified under the head of central subjects. (*a*) Geography, geology, and mineralogy — the sciences of inorganic matter. (*b*) Physics and chemistry—the laws of movement and change of inorganic matter. (*c*) Botany, zoology, anthropology, ethnology, and history—the sciences of organic matter and life. (*d*) Physiology—the physics and chemistry of living organisms.

Central subjects.

There is no classification in nature. The classification of the central subjects is, like all other classifications, an indispensable means of study, an economy of mental action. The central subjects are in themselves an organic, inseparable, interdependent unit. The relation of a subject in itself to any one or to all the other subjects is as intimate as the relation of the part of any one subject to the whole subject. A tree, for instance, is as closely related to meteorology, geography, physics, and chemistry as a leaf to the twig or a limb to the trunk.

No classification in nature.

A child comes in contact with all these subjects in its environment, and begins instinctively its investigations in each and every one of the directions indicated by the central subjects. The doctrine of concentration proposes that these subjects be continued as a child has begun them, until there arrives that period of mental development when a specialization of subjects can most economically grow out of the rich subsoil of the re-

Spontaneous activities continued.

lated knowledge of all subjects. The direct study of the central subjects, by observation, investigation, imagination, and original inference, furnishes an inexhaustible means of educative mental action.

Third: All knowledge of externality depends absolutely upon that action of the *ego* called judgment; all acts of judgment or original inference depend as absolutely upon sense-products, elementary ideas, individual concepts. Sense-products are manifestations or interpretations of external energies differentiated and expressed through qualities of matter: matter, in turn, being known by judging of the differentiated energies which act through it. All study consists in investigation of the changes brought about by energy acting through matter, organic and inorganic. The quality of energy creating or differentiating qualities of matter, in relation to time, space, and motion, demonstrates law; therefore all study is a study of law, of law under which energy acts and is acted upon. Form is the supreme manifestation of energy. Its correspondence in mind is the foundation of all knowledge, is the product of the fundamental intellectual sense—that of touch. It is plain, then, that there can be no knowledge or interpretation of knowledge without a corresponding knowledge and interpretation of form. Form study is the indispensable basis of all knowledge of the central subjects. The mental process of direct form study is observation. The sense-products, corresponding to external forms, are reformed by the imagination. The science of form under the action of the imagination is geometry. Geometry is the science of imaging forms that lie beyond the sense grasp, that exist beyond the hori-

Relative value of form study.

Relation of geometry to central subjects.

zon of the senses, imagination being absolutely dependent upon the products of the senses. Form is the elementary science of geometry; they both have to do with the superficial limitations of objects and bodies of matter in space. It follows, therefore, that they both are integral factors of all study, indispensable to all knowledge.

Form defined.

Fourth: Form is the superficial limitations of objects and bodies of matter in space. Size is the exact limitations of objects and bodies of matter in space. A knowledge, consequently, of both form and size is the basis of all approximately adequate concepts, corresponding to objects and bodies of matter. Through the judgment, the mind measures size by lines, areas, surfaces, and volumes. Number is the special mode of judgment by which an exact knowledge of size is acquired. Weight, that mode of motion we call gravity, is another essential property of matter. Density or compactness of particles or atoms is closely related to weight and size. Knowledge of weight and density is acquired by numbering. The numerical relations of objects and things to each other, it goes without saying, are products of the same mode of judging.

Form and size.

Use of number.

Relation of number to the central subjects.

The proposition of the doctrine of concentration is that the exercise of that mode of judgment called numbering is essential to the acquisition of all knowledge of externality; and also that this mode of judgment may be most economically acquired by measuring and weighing matter, and in all exercises intrinsic to the direct study of the central subjects.

Attention.

Fifth: Attention is the vital process of intellectual creation, induced by the action of external

attributes upon the brain and consciousness. The laws and rules which govern attention are, in themselves, the natural method. Teaching is the presentation of conditions for educative attention. The power of attention is most economically developed by the study of the central subjects. Observation, hearing-language, and reading are modes of attention. Observation has to do with the concentration of external attributes upon consciousness, the results of which action are intrinsic. Hearing-language and reading are processes of thinking by the action upon consciousness of spoken and written words. They are educative processes when the subjects for such thinking are immediately needed for mental action, and when the acts of attention are intense.

Observation, hearing-language, and reading.

Value of observation.

Sixth: Observation, with its factors of experimentation and investigation, is made the elementary, preliminary study of the central subjects. These subjects furnish countless opportunities for the effective action of that mode of attention. The products of observation furnish the psychic foundation for all efficient acts of the imagination. The end and aim of both observation and imagination is original inference, the essential element of reason.

Hearing-language.

Seventh: The oral language which a child has acquired on entering school is enhanced and developed by the enhancement and development of thought-power. The rule of concentration is that oral language should conform to the immediate necessities of consciousness.

Eighth: Reading is thinking, brought about by the action upon consciousness of written or printed words, arranged in sentences. Reading is the

same process in kind as study of text; the latter, however, is more intense, and in a higher degree educative. Under the theory here presented, the power to read and to study text is acquired while used directly in the study of the central subjects. Words and idioms are to be associated with intrinsic thought from beginning to end. In other words, there is to be no reading or study of text which does not directly and immediately enhance the subjects taught. All reading presented to pupils, from first to last, is to be the best of literature.

Relation of reading to study.

In using the three modes of attention,—observation, hearing-language, and reading,—instinctive unity of action is to be steadfastly maintained.

Unity of action.

Ninth: All the modes of expression—gesture, voice, music, speech, making, modeling, painting, drawing, and writing—are to be continually used throughout the course of eight years as efficient means to intensify intrinsic and educative conscious activities. The theory is that each mode of expression has its special and indispensable function in education, its special reactive influence. All forms of thought expression under each and every mode are to be directly acquired under the impulse of intrinsic or qualitative mental action. Unity of action is to be preserved throughout.

Modes of attention.

The best possible physical development of the whole body as an instrument of thought and expression is brought about by continuous natural exercise of the body in the expression of thought under each and all the modes.

Exercise of modes of attention—Means of physical development.

Tenth: Music cultivates those emotions which determine motive and control the will. Rhythm, the basis of all melody and harmony, is a powerful

Music.

means for the adjustments of the body in graceful supple movements, thus rendering it a more and more perfect instrument of the soul.

Gesture.

Eleventh: The pantomimic use of the body as distinguished from its functional use develops higher muscular coördinations, which conserve energy and render the body a more skilful agent of the will. This all-sided action is conducive to health, beauty, and grace; it is, like voice and speech, an immediate response to thought; it is a universal medium of expression, and has a direct organic relation to writing and the conceptive modes of expression. Rhythm, which is the successive flow of the parts of the body in time to tune, links gesture, dance, and music. There is a natural correspondence between oral language and the sign-language, a form of gesture invented for the use of deaf-mutes; this relation becomes more apparent when we consider that a deaf person can learn to read the lips with almost as much ease as he can read the language of the hand.

Conceptive modes of expression.

Twelfth: The conceptive modes of expression have a strong reactive influence upon all the modes of attention—observation, hearing-language, and reading. They are also the most efficient means of developing imagination, enhancing gesture, music, speech, and writing.

Speech and writing.

Thirteenth: By speech and writing all conscious activities may be most completely manifested. I have presented the argument to prove that all forms of speech and writing may be adequately acquired in the evolution and expression of thought; that all the accidents, definitions, and rules of grammar may be thoroughly mastered in

the development of thought-power by speech and writing.

Fourteenth: *All the forms of thought-manifestation under each and every mode of expression may be adequately and most economically acquired under the immediate impulse of intrinsic thought, which means, in turn, that every act of expression shall have its full reflex action upon educative thought.* **Acquisition of forms of expression**

Fifteenth: The main proposition of the theory of concentration is comprehended in the statement that all true education is inherently moral and ethical. Education is the development of the attitude of the being towards truth. All acts of expression consist in the manifestation of truth by each and every mode of expression. The fundamental principle of education is the development of the altruistic motive, under which the highest and best mental action may be acquired. Education is the economizing of physical, mental, and moral energy in the direction of development. Economization of energy is the conformity of the being to divine law. Freedom is obedience. **Moral training.**

I have thus briefly summarized some of the main points in the theory of concentration. The centre of all movement in education is *the child*. We must grant that human beings are absolutely governed by immutable, ever-acting, all-efficient laws of growth and development, and that all development means conformity to the laws of being; nonconformity is decay, degradation, and death. The process, ideally, of education consists in the presentation of conditions, and all the conditions, for the most complete action of the laws of the being. The central law of education is self- **The child the centre.**

Self-effort.

effort, that action of the ego, which, when normal, either consciously or unconsciously conforms to law. The constant adjustment and fulfilment of the laws of being ever condition the action of higher laws and form the ever-moving path of educative action.

I have argued that the fundamental principle of personal development is self-effort. The supreme intellectual effort of the *ego* is original inference.

Original inference.

Original inference is an active attempt of the *ego* to find the truth; essential truth is law. A *résumé* of the argument already made may be here presented. The universe is the manifestation through matter of all-efficient energy. Matter, both organic and inorganic, is differentiated by energy, and thus manifested to the human soul. These differentiations are adapted to personal power of apprehension. Differentiated matter is the visible, tangible manifestation of creative thought; just as words convey the thought of man to man, so differentiated matter conveys the

Relation of energy to matter.

thought of God to man. The universe, with all its contents, is undergoing continual, everlasting change. These changes, we agree, are controlled by immutable laws. These laws are invisible; they are as invisible as consciousness. One central law controls both man and the universe. The laws of

Unity.

the universe reveal the *ego* to itself. All law concentres in the law of being, is manifested for the being; all life is for one life. We are made in His Image, and we approach that Image through the effort to know the truth or the law, and to apply it.

It seems plain that there is one absolute goal of self-effort; that observation, investigation, and knowledge of books have one aim and one pur-

pose, namely, the knowledge of ever-changing nature, and the progressive movement of man. Study of change would be of no value were not the mutability of matter governed by immutable laws. Through all the avenues of changing matter, through history, science, language, and art, the intellect has one ideal action—search for law; one ideal purpose—its ethical application. Why do we study the leaf? We wish to know its relation to the twig, the twig to the limb, the limb to the trunk, the trunk to the roots; the leaf, the limb, the trunk, the roots, to earth and air and water, and to the universe; everlasting convergence is the law of approach to central truth.

All study concentred in the study of law.

The objection to this proposition may be that it is indefinite; that it is too far off; that we know so little really of law, that we cannot effectively make it the end and aim of all education. I answer that the human being in his weakness and power has one mission, and one alone, and that is to reach the truth that shall make him free. If we know little, comparatively, of law, we can have an all-controlling faith in law, in that law which is in its essence love. If we cannot comprehend, we can apprehend; we can move forward tentatively; we can see through a glass darkly; we can turn our faces to the sunlight of truth, and hold ourselves under the influence of its power.

Movement towards the truth.

When we think of it carefully, we are all instinctive believers in the law and doers of the law. Behind whatever we do in our daily lives and vocations is an intuitive knowledge of law; whether we walk, eat, sleep, or work, our belief is fixed and firm that in so far law governs us; that in so far there is nothing left to chance. I ask, as

Instinctive obedience to law.

I have asked before, in regard to the spontaneous activities of the child, what is this instinctive belief in law but the spontaneous beginnings of our advance toward law? If chance had any place in this universe there could be no science, no confidence in study, no faith that would impel upward and onward. The scientist in his laboratory, the geologist in the field, and the astronomer gazing through his telescope believe in law as they believe in God; every effort is governed by a belief that law can be discovered.

Arrangement of material for concentration.

A still more difficult and everlasting problem is the arrangement of material for adaptation to steps and stages of human growth. An ideal course of study is a thing of the future, to be approached by continual adaptations to changing circumstances. What material is best adapted? Shall we find it in this subject, or in that? For instance, is elementary science or history preferable? What shall decide? What lies nearest the child? What does he love best? What does him the most good? We will all agree to the powerful influence of nature upon the child, of earth and air and water, of plant and animal life. Shall that which is already so well begun continue? Human life has just as strong an influence, perhaps a stronger affective power than Nature; shall we choose human life, the foundation of history, for the initial steps? Nature acts upon the child's soul with irresistible power; earth, air, and water sing in his ears their songs of sweetness and beauty; plant life entrances him with color and change; animal life enters into his being; the child is as near the brute as he is to man. Shall the child study nature?

Elementary science.

History.

Influence of nature.

There can be but one answer to these questions: **Continue that which is begun.** *continue that which is begun*, and continue it by such measures and such means as are directly and essentially adapted to the harmonious growth of body, mind, and soul. The means have chosen themselves; God has chosen them in His creation of the human spirit. It is for us to study these beginnings, these germinations of human growth; we are not to affirm that soil alone is good for the plant, or water alone, or air alone, but that all concentre upon the growth of the plant. The child stands in the centre of a circle; around him is the environment of the universe, man and nature. Everything in its elements touches the child's soul; the child's soul goes out towards everything, reacts upon everything. We must not break or distort the circle if we would have it extend and grow upward in the spiral. The base circle must ever widen, and with it each spiral as it tends upward in its way toward the light and the truth. We, as teachers, must avoid placing undue emphasis upon that which we know best, and that which we love the best; we must remember we are not educated as we should educate the child. We may love history, and see in myth an all-powerful influence for mental and spiritual growth but fail to see, because we do not know, the potent influence of nature. We must remember that the making of a course of study completely adapted to the needs of human growth would require infinite knowledge; it can only conform to the finite in its *approach* to infinity. The beautiful thing, the sublime thing, about education is, that we can never find the end; that we can never fully

The child in the centre of the circle.

Infinity of means.

know the means; that we can never comprehend the centre, the human spirit.

The "suspended judgment."

Some one has said truthfully that "suspended judgment" is the greatest discovery of the nineteenth century. We walk by faith and not by sight; faith in God and faith in His highest creation. Our work is to continue creation, is to furnish the conditions for creation; and when we apprehend this, and include in its apprehension the fact that whatever we do to exalt the human soul is eternal in humanity, eternal in its influence upon humanity, we begin to get a slight glimpse of the sacred calling of teaching. The dignity of life is the feeling of eternity behind and before; that the soul is one with eternity.

Concentration cannot be understood by artisan teachers.

All that can be done is to point the way towards that which is better and higher for humanity. The rule is, the more exalted the art, the more difficult it is to understand its principles and to apply them. The great advantage of the doctrine of concentration is, that its application absolutely requires the art of teaching. Let us look practically at the propositions presented. I have urged that all subjects taught in any university shall be begun in an elementary way, with the little child of six years of age, and that exercises in all the modes of expression shall be continued or initiated.

Overcrowding courses of study.

We have had a great deal of discussion in regard to overcrowding courses of study; that there is not now time enough to *thoroughly* acquire the "3 R's," a smattering of geography, and a touch of history. What would be the outlook if all the subjects named were formulated in courses of study and demanded by supervisors?

I answer, from the quantity standpoint, that it would be confusion worse confounded. From the standpoint of quantity, the prevailing studies in primary and grammar schools are all-sufficient. Indeed, expert investigations have shown that after eight years of drudgery the children do not read, write, or cipher well, and understand very little, comparatively, of geography and history. What would become of the schools if botany, zoology, geology, and the other central subjects were introduced? The burden would indeed be greater than either pupils or teachers could bear. **Quality versus quantity.**

If, then, the theory of concentration be true, it commands a complete reversal of motive in teaching. It demands that quality of mental action shall take the place of quantity. This demand is consonant with the goal of all human development and progress—freedom. In other words, the business or trade of teaching must be revolutionized into the art of teaching. Quality of mental action may be summed up in one sentence: it consists in the supreme power of the mind to reason, to choose for itself. **Art of teaching.**

The basic element of reason is original inference; the path of original inference is generalization; the goal of generalization is the finding of the law; the basis of original inference is the knowledge of facts, of data gained by observation, hearing-language, and study of text. The art of teaching consists in the ability to guide self-effort in the direction of original inference. The teacher with light enough ahead to lead, moves on towards truth, hand in hand and heart to heart with the pupil. **Original inference.**

It will be readily seen that the power of original

inference imperatively demands knowledge of facts, gained by experiments, investigation, observation, reading, and hearing-language. The emotion resulting from self-effort in these directions is the highest inspiration the mind can have to acquire facts. The power of original inference develops the power to grasp truth, to know facts. Original inference is that knowledge which is intrinsically power in itself; it demands summing up of facts, relation of ideas; it tests the truth of offered conditions. The main reason why children, after struggling through the elementary and secondary schools, know so little is because the ideal of their teachers has been the acquisition of quantity. Reason demands quantity, but quantity is subservient to reason; reason leads, and quantity follows.

Relation of original inference to data.

The crucial test of the theory of concentration is found in the doctrine of quality of mind action, as opposed to quantity. The motto is, "Take care of the quality, and quantity will take care of itself." I would present some of the infallible indications of quality teaching:

Indications of quality teaching.

(1) The artist teacher watches with the greatest care and assiduity the character of each pupil; watches mental action through all modes of expression.

Courses of study.

(2) A course of study is a means to an end; from the course of study the teacher selects that material immediately needed for the advancement of personal mental and moral power.

Study of the child.

(3) The artist teacher is everlastingly studying pupils and seeking for better means to assist them in righteous self-effort. Close, persistent, indefatigable study of the child and of subjects for the child is a marked indication of the quality teacher.

(4) The artist teacher has some apprehension of the infinity of means directly at hand for the development of pupils.

(5) All quality teaching concentres in immediate manifestation in character; history lives in the child; civics and ethics mean daily life; science is applied in school and at home. There is no waiting for future effects in quality teaching.

(6) Quality teaching excludes all competition, undue rivalry, and the cultivation of sordid ambition.

(7) The essence of quality teaching is love; its one aim, the truth.

Teachers as students.

We have tens of thousands of teachers, but we have few earnest, enthusiastic students of education. Genuine progress on the part of the great majority of teachers is scarcely perceptible; after a few years of school-keeping their work becomes routine, in which their souls seem buried. It is an exceedingly difficult thing to introduce methods founded upon universally recognized psychology.

Results of quantity teaching can be measured.

The reason of this is apparent: quantity teaching, teaching that can be measured by line and plummet, and weighed in the scales of per-cent examinations—such teaching does not admit or require the application of educational principles. We have reached the ultimate in the direction of quantity; devices and so-called methods have been multiplied to the point of surfeit. A teacher not governed by sound principles is an easy prey to the countless devices and methods which infest the educational market. Given honest, persistent students of education, the movement onward would become general and effective; each teacher would contribute something of value to the common good.

Tentatives.

Some plain facts in the theory of concentration may be easily understood and applied. It is not necessary, by any means, to master the whole theory before the first practical steps in its application may be taken. Indeed, most courses of study, now, involve unification of studies to some extent: geography, for instance, comprehends in a vague way history and most of the sciences. The particular virtue of this theory is that it admits of tentatives. A teacher may see that educative thought has a direct influence over the acts of word-association, and with phonic, phonetic, even word methods, may introduce partially the thought factor in teaching the first steps of reading.

Tentatives in arithmetic.

In all text-books on arithmetic there are concessions to the practical use of number in a few of its countless applications to the central subjects; the main line of study may be enhanced by relating arithmetic to geography and science, and the drill work still be continued.

In penmanship and art.

Although copy-book work in penmanship be generally maintained, tentatives may easily be made in the direction of thought expression. A teacher, while following assiduously some "system" of flat copy-drawing, may find occasional place for real drawing in connection with botany, geography, and the other central subjects.

Co-ordination of geography with other studies.

In the same line, structural geography may be more effectively co ordinated with geology and mineralogy, and history with geography. A glimpse makes way for a gleam, and a gleam broadens into a full blaze of light through honest striving in right directions. "He that doeth righteousness is righteous."

One other great advantage may be mentioned. This doctrine will serve intelligently to suggest, guide, and control study on the part of teachers. Many teachers are very anxious to study—indeed do study persistently; but very much of such study is groping in the dark, is blind, but honest, stumbling. The theory of concentration presents a distinct plan for economical study on the part of teachers, and at the same time demands increased and progressive movement. It proves conclusively the absolute necessity of knowing the central subjects and their auxiliaries thoroughly, and it proves also that the teacher should have masterly skill in the modes of expression. This direction of study and practice is the application of the theory. *A teacher must know the subject he teaches; must know far more than he teaches; must have great skill in all the modes of expression.*

Incentives to study on the part of teachers.

"The realization of the ideal," you say, "is an utter impossibility." Certainly, for us, the victims of quantity teaching; *but the thing to do, the thing that must be done, if we are true to our sacred work, is to move steadily and unfalteringly towards the ideal, along the infinite line of unrealized possibilities.* I firmly believe that the theory of concentration throws a strong light along the path of progress; and although in that light difficulties stand out clear and distinct, difficulties multiplied do not produce doubt; to know is to conquer.

Impossibility of reaching the ideal.

The application of this theory gives teachers most favorable means for a comprehensive insight of personalities, the individual powers of pupils. Individuals are studied through the action of various modes of expression, which reveal the particu-

Study of personalities.

lar attitude of the mind towards all subjects. Thus weakness and strength may be perceived, right tendencies understood and encouraged, and wrong ones corrected. The art of teaching discriminates the individual, distinguishes him from all others, and applies the means needed for personal development. The steady, ever-brightening glow of enthusiasm in the teacher's soul inspired by the study and application of a far-reaching theory, is the most potent, indeed the paramount, influence to inspire pupils with a love for work. When a teacher loves a few subjects and ignores all the rest, the pupils are sure to follow suit. Concentration demands that a teacher shall see truth and beauty in all subjects, for all, are in nature and purpose one and the same.

Influence of study on the part of the teacher.

Isolation of subjects.

The prominent weakness of education is *isolation of subjects;* reading by itself—first steps and consequent ones; writing in copy-books; arithmetic with an occasional application; geography without history; history without geography; "art for art's sake." Indeed, it seems as if the universal tendency has been to separate subjects as widely as possible; to completely ignore organic synthesis. Isolation is analysis gone to seed. No truth is more striking than the essential relation of all subjects to each other. One can scarcely make an effective generalization without going outside of the subject immediately in hand. Philosophy, the science which groups all sciences into one science, proves that the normal action of mind is ever toward unity: relation is strength, isolation is weakness. Convergence, not divergence, is the law of normal movement—meeting lines that concentre in the heart of things.

Concentration is utterly opposed to one scheme that has been lately revived by some very intelligent teachers. I allude to special or departmental teaching in grammar schools, the arguments against which can be briefly stated: **Departmental teaching.**

(1) The value of teaching to a pupil is determined by the teacher's personal knowledge of the character of that pupil. Character in its complete analysis is revealed by the study of all subjects and through all modes of expression. Any misunderstanding of a pupil, however slight seemingly, is apt to lead to disastrous results. A special or departmental teacher cannot possibly know individual character, for two reasons—lack of time and failure of means; a character cannot be revealed through any one isolated subject. **Arguments against departmental teaching.**

(2) Special teachers, as a rule, study but one subject, and therefore do not apprehend in the slightest the buttressed power of relations of subjects. A teacher of penmanship cannot use writing as a potent means of thought expression. A teacher of art alone, cannot well understand its intimate relations to geography, science, and history. A special teacher of arithmetic cannot use numbers as a mode of reasoning upon all subjects. A teacher of reading and elocution has few opportunities to use oral expression as a means of intensifying thought in all-sided expression of all subjects. It is not easy for a teacher of history to relate that subject to geography as a basis for reasoning and memory. How many teachers of science see in nature-study the best possible means of teaching reading, writing, number, and art? A teacher of literature does not readily understand that literature is the mirror of the highest thought

of the age in which it was written, and therefore does not turn to advantage its reflected rays upon historical epochs. A director of physical training cannot well appreciate that the end and aim of all physical exercise is to make the body a more efficient instrument of attention, expression, and reflection. A teacher of vocal music may fail to use the potent influence of cadenced rhythm to harmonize body, mind, and soul. In fact, from the very nature of things, it is practically impossible for a special teacher to use all subjects of study and modes of skill for the purpose of concentrating them upon one subject.

A regular teacher needs every subject to develop character.

(3) * A teacher of forty or fifty pupils needs every subject as direct means of individual development. To take away any one subject is practically to rob the teacher of a potent means of education.

Regular teacher will not study subjects taught by special teachers.

(4) Whatever a special teacher manages, the regular teacher is very apt to omit from his list of studies, and a failure of interest is the inevitable result. For example, how many teachers write well enough to teach penmanship? Do you know many teachers who can draw readily and easily upon the blackboard? How many read well enough to inspire their pupils with the beauty and truth of literature? with the hidden sweetnesses of poesy?

It is argued that specialists give their entire time to one subject, and can therefore teach that subject better. This argument falls under the quality ideal. How much historical teaching "*schwebt in der Luft*" because the teacher himself knows nothing of the stages and scenes of action? A regular teacher who understands his pupils, and whose sole aim is quality of mental action, will use

History and geography.

* During the first eight years.

a subject which he imperfectly knows with far greater effect than a specialist who is comparatively master of his subject. Knowledge of subjects is of immense importance—indeed, ignorance of subject-matter is a fundamental weakness in teaching; but great as is its importance, lack of insight and knowledge of personal character is the prime reason why the efforts of many highly educated teachers are wholly ineffective. It should be added that a teacher who studies personal character needs must be, from the very nature of things, a persistent student. The most encouraging feature of concentration is that it demands persistent study of all subjects, and practice in all modes of expression on the part of the regular teacher; indeed I venture to predict that the last teachers to study and adopt this theory will be the teachers of special subjects.

Knowledge of subjects versus Knowledge of the child.

The pre-eminent virtue of concentration is the economy of mental power, the path to freedom by the shortest line of resistance. It proposes that the action of the mind shall be concentrated from first to last upon intrinsic educative thought; that all modes of expression and attention shall be auxiliaries, and acquired as auxiliaries. It means that the famous "3 R's" of antiquity may be learned—nay, are learned—far better, far more effectually and efficiently, used as means to an end, than as ends in themselves. It means that a child during the habit-forming and curiosity-seeking period of life shall be led directly to the sources of truth, and shall lay sure foundations for all future growth. It means the early establishment of the habits of self-effort, of attention, of observation. It means the habit of using and applying that which

Economy of mental power.

is acquired. It means the cultivation of judgment and the power to generalize; the establishment of the true relation between life and school.

Evil effects of quantity teaching.

The quantity ideal, I have already said, defeats itself, is stultified in piles and heaps of mere formal acquisitions. The best, the truest, and sweetest of all God's gifts to man, the right of choice, the glories of the imagination, the curiosity for knowledge, are crushed and maimed by ignorant teaching. When the child comes to its own through the mediation of the artist teacher, the power, the knowledge, the skill acquired will immeasurably exceed that of the few geniuses who have blessed the earth. A genius is an unsuppressed soul, with strength enough to overcome all difficulties and reach its own. "Seek first the kingdom of heaven and all things shall be added unto you." "Eternity is quality," says Hegel. "Time is the false reply," affirms Emerson. The child will come to his own when he has the liberty and conditions of becoming free.

Eternity is quality.

Revision of courses of study.

Concentration demands the continual revision of courses of study; revisions comprehending progressive movement in the art of teaching. An ideal course consists of the presentation and arrangement of conditions and all the conditions, adapted to the steps and stages of being's development. Such a course in the hands of poor teachers is like an intricate and complex piece of machinery in the hands of a tinker. The more meagre the course, the better for inferior teachers whose mechanical drudgery is fixed in the Procrustean bed of formal monthly tests, and inspired by *en bloc* promotions. An effective course of study must be adapted to circumstances ; by circumstances is

meant the knowledge and skill of teachers, the art of supervision, and the intelligence of communities. Such a course of study bends upward under the energy of progressive teachers, and downward to meet the scanty wants of the artisan; it moves onward toward the ideal; it is constantly receiving new additions as skill advances. The theory of concentration suggests the line of progress, and the outlines of courses of study.

Courses of study should be adapted to circumstances.

There is at present no rounded exposition of a science of education by an English author. There are some excellent works upon education, but they are at best fragmentary, and are far from being a complete theory. Germany offers us several expositions of the science of education: undoubtedly the best is the Herbartian theory of concentration; it is certainly well worth the careful and profound study of all educators. But, however good and sound a theory may be, its adaptation to conditions must be considered ; form of government, relation of classes, and social customs have a powerful influence over it. The Herbartian theory stops short of the demand for complete individual freedom through personal effort.

No science of education adapted to a republic.

For one hundred and eighteen years the greatest experiment in the world's history has been tried in our Republic—the attempt of society to rule itself. With the progress and partial success of this experiment dangerous complications appear. which imperil its final triumph. Character, whose essence is love for God and man, alone can save us, and lead us to the time when obedience to divine law shall be the one rule of action. In our nation alone can the theory of personal freedom be translated into action; the doctrine of personal freedom

Conclusion.

and of concentration are one and the same. With a profound belief in God and man, in Democracy as the path to universal freedom, I present this theory to you, my fellow teachers, as a suspicion (*eine Ahnung*) of the truth.

XVI.

DEMOCRACY AND EDUCATION.

THROUGHOUT the ages mankind has moved on under two great controlling ideals of government: the predominating one, the rule of the many by the few, the aristocratic ideal; the other, embryonic, unformed, glimmering and flickering down the centuries, an ideal at times almost disappearing from view, again flaming, lurid with portentous light—a belief that society should rule itself. **Aristocracy and democracy.**

I need not pause to define the ideal of aristocracy. History is full of its types in every form from the beginning. The fundamental motive of this ideal is selfishness, the desire for domination, power, ease, luxury. It posits that a few human beings are born to rule, are God's anointed ; that the rest are subjects, foreordained and predestined to obey and to serve without question. *Its design is the complete subjugation of the masses to the domination of the few ; its methods, to prevent human souls from seeking and finding the truth.* **Motive of aristocracy.**

The motive of aristocracy is one and the same everywhere, whatever its guise, phase, and method: all for one purpose, to one end—complete domination and subserviency of the majority to the unquestioned will of the small minority. Aristocracy watches with keen eyes every potent influence, and captures it for its own behests. Whenever and wherever an organization of state, church, or **Means of control.**

society acquires great influence over the masses, no matter how good and pure the principles or creed that bring it into power, it is seized, bound hand and foot, and made to serve the governing power. Selfishness masquerades in the garb of purity when there is no other way to reach its ends.

Religion always good for mankind.

Every religion in itself has been the initiation of something better for man. The great founders and reformers of religions have, almost without exception, discovered divine truths, have brought into the world some great good for humanity, inspirations and revelations for the elevation of humanity. They and their immediate followers were ready to endure torture and death so that new truth and new life might touch the souls of men. The better the religion, the more it appealed to the divine principle in man, the more heroically self-sacrificing the deeds of its disciples, the greater its influence over the people, the greater its power for evil became when controlled and wielded by selfishness. In the history of every great movement for good there comes the time when, seeing its influence, the dominant few grasp it and use it as a means of control. This rule has been without exception in the past, and is just as true to-day as it was centuries ago; no matter what the party or what the sect, predominating influence makes it the prey of sordid gain; thus religion suffers under a burden of reproach and recrimination due entirely to the greed of selfish man. A believer in democracy and perfect toleration, I shall criticise no religion, nor religious sect; I shall confine my discussion to those methods which keep man from a personal knowledge of divine truth.

Religion used as a means of controlling the masses.

It is my purpose to trace the methods by which

selfishness has managed to rule the people, in order to understand their mighty traditional effect upon a nation which proposes to rule itself. **Methods of aristocracy.**

The first method is that of *mystery*. The early savage was terrified by the forces of nature; his more cunning brother having solved a few of the simpler mysteries used the acquired knowledge to overawe and enslave the souls of his brethren. Ever since, mystery has been one of the most effective means to control the masses. That knowledge of nature's laws, which should be a common heritage, has been shut up in temples and caves, and used by astute priests and rulers to keep the masses in terrified subjection. Anathemas, promising woes unbearable to those who dared to doubt self-constituted authorities, were thundered in the ears of crouching vassals. The most repulsive and repugnant doctrines that have brooded like a nightmare over a suffering world had their origin in this motive of selfishness and absolute domination. **Method of mystery.**

The presumption that certain divinely anointed persons are the favored recipients of revelation, from which the ignorant masses are rigidly excluded, and that a human soul is not capable of finding truth for itself, have thus been the effective means of its utter subjection. Astrology, alchemy, and the so-called occult sciences have been in turn used to blind the eyes of the ignorant, to make them tremble before facts exceedingly simple, and which should have been used as means of education. The stream of life has been poisoned at its source.

The second method is that of *physical force*— of prisons, torture, police, and standing armies. It may not be fair to say that all crime is the result of oppression, but this statement is not far **Method of physical force.**

from the truth. There are crimes which are virtues: the crime of disobedience to soul-degrading laws—laws that forbid the personal search for truth; the crime of rebellion against injustice and oppression; against inhuman laws that have filled dungeons with countless thousands, and covered battle-fields with slain whose one fault was a desire for liberty. The plan under the method of physical force was to keep the masses in the total darkness of ignorance, and hold them in abject subserviency by fear of punishment. This enforced ignorance is the prolific cause of nearly all genuine crimes, or infractions of God's laws; it is the direct and inherited outcome of that abuse of power which has one aim—the complete domination of the masses by a small minority.

Plan to keep the masses in ignorance.

Principal use of standing armies.

The mighty standing armies of to-day, which eat out the hearts of nations and make misery and poverty the burdens of society, are kept more as a means of suppressing the personal right of choice than of defending the nation against foreign foes.

Method of isolation.

Isolation of a people into classes is a powerful method of selfishness. Isolation of society into classes and castes is the sowing of the dragon's teeth, from which spring misunderstanding, mistrust, suspicion, contempt, and hate. A homogeneous people is, from its very nature, a strong people. Up to the time of the Saviour, each nation had its national god; everything outside of the nation was wrong and wicked; the gods of other nations were devils; the national god forbade intercourse and commanded extirpation of all peoples not under his immediate control.

The forms of isolation are many, but the effects

are the same; they are well illustrated by China, which is the example of geographical or natural isolation: having the oldest civilization in the world, making the greatest progress in its earliest civilization, but separated by great mountains and deserts from other nations, it is shut up in itself, and so does not come under the modifying influence of other peoples. The result is stagnation, fixed form of government, fixed ideas, and retrogression. The people of China have an utter contempt for what to them are the outer barbarians. People must mingle with each other in order to know each other; nations must have immediate contact with each other. Even war in this respect is sometimes the greatest blessing, for, with all its evils, it furnishes that knowledge of other nations which the exigencies of growth demand.

Natural isolation.

Class and caste isolation has been, and is to-day, the strongest means of reducing the essential power of a nation, by making its lower classes weak and uninfluential. An illustration of this is found in India. We are told by the Hindus that caste in its origin was a necessity, but it has made India one of the weakest nations on earth; it prevents all homogeneity of action. That which is true of India is also true of all the nations of the old world. Separation of peoples into classes is the most effectual means of keeping the common people from any notion of their rights.

Caste isolation.

Class isolation is supplemented strongly by *class education.* It is a well-known fact that no nation in the world other than the United States has common schools; that is, *common* to all the people. The splendid schools of Germany, for

Class education.

instance, are class schools. The only free school, Volkschule, is for poor people. This isolation of classes and sects in education is a potent means of holding society in its stratifications, the permanent basis of thrones. Any feeling of personal rights on the part of the common people is in the highest degree dangerous to the rule of the few; therefore the entire machinery of suppression is used to stifle human reason, or render its results abortive. Class separation of children in schools is the only safety of central governments. Common schools in any monarchy would change its form of government in twenty-five years.

Common schools peculiar to the ited States.

Sectarian isolation.

Equally influential is church or sectarian isolation, the education of children of adherents of one sect in separate schools. No one can disclaim the right of parents to educate their children; but the effect of sectarian isolation in school, no matter how sweet and pure the religion taught may be, is mistrust, contempt, and too often, hatred, of all other sects. The creed does not rely upon its intrinsic value, but upon its method of isolation ; upon the keeping of the children of its peculiar sect separate, that they may be inoculated with prejudices, instead of being filled with love for all mankind. It is true that a few come together from all schools into the universities, but there is no actual union. The class or the sectarian feeling by this time has become so strong, that mutual sympathy is well-nigh impossible.

Great cival war.

Isolation is the most effective method of aristocracy. If the people of the North and the South had known each other in 1861 as they do now, if they had been bound together by railroads and telegraphs as in 1894, no power on earth would have

led them to drench the land in fratricidal blood. The foundation of most evil is misunderstanding, distrust, repulsion, or hate, the baneful products of isolation. People in order to love each other and work for each other, must live together in communities, must be bound together by common interests.

Method of bribery.

The next method of aristocracy to which I allude is *bribery*. All the machinery and methods of oppression and suppression possible cannot effectually keep the human spirit from struggling to become free; and so there have been in all ages children of the people, with a vague sense of inalienable rights, reaching upward to the light. In war, inventions, in learning, no matter how great the difficulties, a few pertinacious, persevering souls have made their power and influence felt. One effective method has been used upon such persons: the moment their influence was needed for the rule of the few, it was *bought*,—paid for by office, or by direct gifts of money, if that were possible. Aristocracy is ever on the watch for these dangerous individuals, who break down the barriers and reach heights from which they can look down upon "God's anointed."

Buying the people.

We all recall the early republics of Greece and Rome, that were changed into tyrannies by buying the franchise of the masses. Bossism in politics is the survival of this powerful means of suppressing freedom of thought.

But one cannot fail to see in history that in spite of all opposition the human spirit has moved on: there are ever new necessities creating new demands. The primitive method that has dominated up to within a few years was to keep the

masses of people in utter ignorance, controlling them by mystery, force, and bribery. But there came a time when the demands for education were too strong; when a ruler, for instance, would see that the subjects of his nation would be better servants with some education. Or it may be that a glimmer of the truth would come into the brain of a king, and he would hear the command, "Let my people go." At all events, a movement toward popular education has marked this century and the latter part of the eighteenth.

Popular demand for education.

But here arose a great difficulty,—how to make useful subjects, and at the same time prevent them from thinking and reasoning for themselves. The most dangerous thing absolute authority can have is a born leader in the lower classes with some glimmer of his own rights,—some belief that he, no matter how poor his condition, is equal to the highest in the land. This spectre, which has ever haunted absolute power, is the "perturbed spirit" of all centuries, and will not down.

The masses will think.

The problem was how to give the people education and keep them from exercising the divine gift of choice; to make them *believe* that they were educated and at the same time to prevent free action of the mind. This problem was effectively solved in the method of *quantity teaching.* I need not describe at any great length what the method of quantity is: it is the prevailing method of to-day,—of text-books, pages, word-cramming and word-recitation; of learning, believing, and conforming; the method of pedantry; the method that limits the mental horizon; the method that keeps the mind from looking outside of a certain definite circle; the method of implicit belief.

Method of quantity teaching.

It is the last ditch of the rule of the few—forced by necessity to give the people education, but still acting to keep the people from the highway of freedom. The method of quantity is almost absolute in its influence; not quite so, for there have been in every age geniuses who, given a stone, would transform it into the bread of life.

Quantity teaching explained.

In order to explain this method, I must contrast it with the true method, the method of quality,—quality of mental action. I have said that education is self-effort toward freedom by the shortest line of resistance, self-effort in finding and applying the truth; and this is what I mean by quality of mental action—that action of the mind which makes original inferences, which goes through consecutive reasoning processes based upon exact data. The most precious gift of God to man is choice; free choice is the dividing line between man and man, and man and the brute. All progress consists in the discovery and application of truth; man was created to contribute his personal mite of self-choice to the great body of discovered truth. Education consists in presenting the right conditions for personal choice.

Choice.

Quality teaching.

If the quality of mental action is right, the quantity will take care of itself. The reason why most students have after long years of painful, arduous drudgery so little mental power, is that their whole ideal is the acquisition of a quantity of facts: they have never had any exercise in quality of action; their minds are simply passive receptacles, taking without resistance that which comes from supposed authorities; self-reliance buried past all resurrection by sixteen years of persistent word-cram.

The products of this method of quantity may be

so-called scholars, learned savants, pedants, walking cyclopedias; but have not the inventions of the ages, the newer discoveries of the truth, been met by the opposition of just this class of pedants? The common people have always heard the truth gladly; but the pedant, whose belief in himself is absolute, whose imagination never catches a glimpse beyond the fixed barrier of his own fixed belief, has ever rejected it. Pedants and bigots are the worst outcome of quantity teaching. They have stood as the mighty barriers of progress in all ages; they drove Galileo to prison. It was not one sect alone, but all the learned men, both Protestant and Catholic, of Europe who opposed him, because they had not the power to investigate the truth he presented.

Pedants.

The most striking example of this quantity learning is found in the annals of the little kingdom of Prussia, than which no nation has ever had a more wonderful history.

Prussia.

The kingdom of Prussia, consisting of swamp and sand, in the cold north, is surrounded, aside from the icy waters of the North Sea, on all sides by opposing nations: on the east, Russia; on the south, Austria and the rest of the German States; close by, France and Great Britain. In the early part of the eighteenth century the common people of Germany were boors, just emerging from barbarism, with a language which Frederick-the-Great himself said was not fit to be spoken by gentlemen. The great problem of Frederick-the-Great, a born warrior and a born king, was to make his kingdom a power in Europe. Like all the members of the Hohenzollern family, he had great insight and a profound knowledge of conditions. His first

The problem of Frederick-the-Great.

movement was to train soldiers—a work begun by his rough and energetic father. The first soldiers to stand firmly in line and be shot down were the soldiers of Frederick-the-Great in Silesia. The next step in progress was to train workmen—laborers to cultivate the farms and work in the shops. And for this purpose Frederick-the-Great founded, in 1735, the first industrial school in Berlin.

Trained workmen.

Frederick-the-Great's design—a dangerous one for a monarch—was to make his subjects a great power in the nation; it was not his purpose to raise the lower classes or to increase their political influence, but to give them the skill necessary to essential assistance in the government. He did not understand the potency of better environment upon the awaiting soul. There have always been men who have pierced the darkness; who have felt the glimmer of the light of freedom; who have had a glimpse of the path of liberty; who, divinely appointed, belong to no age and to no one set of people. In Prussia the pregnant discussions in philosophy by Wolff and Leibnitz came with awakening force; but a still greater influence came from the republic of Switzerland, when a man inspired to save mankind sought for means to educate the children,—sought and found. That means was *quality of action*, and the conditions were to bring the children close to the great teacher, Mother Nature. Pestalozzi translated his fundamental precept, "Education is the generation of power," into action. Generation of individual power is what monarchs, kings, nobles, and princes have everlastingly denied. This hero of education, this divinely inspired man, was indeed a voice crying in the wilderness, "Prepare ye the

Philosophy of Wolff and Leibnitz.

Pestalozzi.

way,"—give to each human soul the liberty to work out its own salvation.

Fichte.

Fichte, the great German philosopher, heard of the work of Pestalozzi, and he persuaded William III. to send ambassadors across the mountains to sit at the feet of this teacher of new truth; and when he learned how the wonderful teacher brought little children around him and taught them sermons in stones and good in everything, he said, "I await the regeneration of Germany from the teaching of Pestalozzi." This was the first glimmer in Prussia of quality teaching, of the teaching of self-effort, the first opening of the path to freedom. It came into the Prussian schools, and for the time controlled them; but then came fear and trembling upon the king and nobles. The smothered rights of the people in France broke, with volcanic horrors, the crust of ages of oppression, destroying artificial society, threatening all Europe with the same fate. The advisers of the king were quick to see the cause: "The people are thinking; they believe that they are our equals. This is the fundamental cause of the difficulty in France, and this is what you are doing in the schools of Prussia: you are teaching the children to think for themselves; you must stop it or you are lost."

Children think and kings tremble.

French Revolution.

In Prussia a minister of education has complete control of educational affairs, and to him the king issued his commands: "Go back to the catechism, to page learning, to belief in implicit authority; go back to that which keeps the soul from becoming free; return to the methods of quantity." And back they went; then followed years of retrogression.

Return to quantity teaching.

That minister of wrath against oppression, the great Napoleon, himself the incarnation of selfishness, proved the inherent weakness of aristocracy by hurling thrones to earth, and crumbling in the dust governments supported by oppression. He laid his heavy hand upon Prussia, and crushed it like an egg-shell. Hope seemed gone, and the mighty power developed by the genius of Frederick was, to all appearances, annihilated. At this critical moment appeared a statesman with the vision of future centuries—Von Stein. The great minister said to the king: "You have feared the masses and separated them from you: let them feel your sympathy; let us change our method from quantity to quality; bring back into the schools the spirit of Pestalozzi." It was done; a new cultus-minister was appointed, and the breath of liberty swept over the land. The people felt its saving power, and came *en masse* at the king's call. Under Blücher, at Belle Alliance, the conqueror of Europe met his final overthrow.

Napoleon crushed Prussia.

Von Stein.

Indeed, Prussia seems to have particularly set itself to solving the problem of just how far it is safe to allow a people to think for themselves. Her tentacles, never cut, recoil quickly at the first suspicion of danger. In 1848, at the time of the general uprising in Europe, the first movement of Prussia was to suppress quality teaching, object teaching, science teaching, everything, in fact, which led in the direction of freedom. Diesterweg, the devoted follower of Pestalozzi, and the best teacher of Germany, was dismissed from his position as principal of the normal school in Berlin, and Froebel's kindergarten was interdicted;

Rational teaching suppressed.

the flame of liberty was blazing too brightly under their fostering care.

Bismarck.

I will cite one more instance. The greatest statesman of our day, Bismarck, had the all-absorbing ambition to reunite the German states, which had been separated ever since the days of Frederick Barbarossa, into one great empire. How did he do it? Though an absolute monarchist himself, he knew how to touch the hearts of the people; he knew how to bring them together as one. The people were sensitive of their own rights, and they must be made to feel that the purpose of the king was the recognition of these rights.

A new cultus-minister.

A new cultus-minister, Von Falk, was appointed, and the teaching of quality again begun in the schools — object-lessons, investigations, experiments, liberty to think, liberty to become free. The people, as ever, responded generously and heroically: Prussia, at the head of the German nation, conquered France, and re-established in its pristine glory the ancient empire. Thus, from first to last, the education of Prussia has wavered between autocracy and democracy, between quantity and quality.

Method of charity.

There is one more method to which I wish to allude briefly, and this I may call the *method of charity*. I would speak of it with many qualifications, and would first define as clearly as possible what I mean by the method of charity. There is a genuine charity which cares for incompetents and unfortunates, for imbeciles, for the deaf and the blind, which needs no commendation: it is intrinsically ethical. There is another form of charity, which keeps people from helping themselves, lessens self-effort, and creates paupers

Most charity renders people helpless.

—a charity which has given Europe millions of beggars, who hover around the church portals and crowd the streets; millions whose regular and ostensible business is begging; a method of charity which, to-day in America, is creating droves of tramps that infest the land. What is the cause of this widespread and baneful method of charity? It can with safety be said that nine-tenths of all money given in the name of benevolence has for its lasting effect the *suppression of honest self-effort*. When a nation does not give its people the means of education, the liberty to become free, the genuine means of self-help, there must result, from the very nature of things, a great mass of poor and wretched people, who are thus rendered unable to help themselves.

Suppression of self-effort.

A feeling has been sedulously cultivated that "giving to the poor is lending to the Lord." The result of misconstruing this divine sentence has been the development of a great class of human parasites, whose motto is, "The world owes me a living, and must give it to me." From this class springs much of real crime, for it is but a step from beggary to burglary. Persistent charity to people who could and should be led to help themselves promotes crime and vice, and creates a class of incapables.

But this charity appeals to people in such a strong way; it is such a beautiful thing to be charitable, "to bind up the wounds." We have pictures by the score in Sunday-school books and novels of the sentimental type, which bring tears to the eyes of people unenlightened. The Duchess rolls through a beautiful park from her magnificent castle to some distant brickyard upon the estate, and finds a poor woman confined to her

The beauty of charity caricatured.

bed with an acute attack of rheumatism, brought about by unhealthy surroundings and improper nourishment; she is surrounded, it is needless to say, by starving children. The Duchess in all sincerity prays that the poor sufferer may be resigned to this affliction which the Lord has sent upon her, gives her a loaf of bread and a bottle of wine; all are touched by her kindness of heart. She passes to her waiting carriage, silently and pathetically watched by neighboring tenants passively awaiting their attack of rheumatism and consequent visitation. What a horrible caricature of charity! Surely it covers a multitude of sins when society in its name does penance for sins of ignorance, neglect and injustice. "Am I my brother's keeper?" To whom belongs the castle, the park, and all these riches?

Enough for all.

There is money enough, land enough, food enough and work enough for all mankind, and the problem of charity is the problem of justice as well—the problem of the right distribution of labor, the right distribution of effort. There is no religion or government worthy the name which does not give to each individual the means of self-effort, the means of self-support, the means of gaining food and a livelihood, happiness and freedom. This is true charity, not the sham which masquerades in its holy name, a panacea and a penance for the sins of the few against the many.

Moral reforms.

There is another work of charity which is worthy of the most profound reverence and the greatest approbation: I speak of moral reforms that have swept over the civilized world during the present century; reforms in temperance and all namable and unnamable vices that fill God's earth with

wretchedness, poverty and crime, sapping the very foundations of society. Millions of money are spent and millions of devoted lives sacrificed to the sacred cause of remedying,—what? *That which never should exist*, and never would if the nation took righteous care of its children. *Reform means curing unnecessary moral diseases.* The deadly virus of central and absolute government has inoculated good, humanity-loving people with a predominating disbelief in the possibility of developing moral character out of the divinity born in every child.

Curing unnecessary diseases.

Eager thousands will crowd around enthusiastic orators describing the alarming dangers that threaten society, and pointing out the *only* remedy. *When shall we have the same kind of conventions of the people to thoughtfully consider the ample means of saving every child?* Give one tithe of the earnestness and enthusiasm to child education (prevention) that is given to reform, and the blessed work of salvation will be done.

Moral reforms are necessities caused by false and sordid systems of government. Reforms must gravitate toward the child; when the exhaustless, loving energy of reform is concentrated there, truth will surely make His children free.

A little child shall lead you.

The rule of the few over the many has been universal, because a lack of faith in the people has been universal: men have taught that the human soul cannot find the truth for itself; that it must have a sure and certain guide, and that this guide and this authority reside in certain divinely anointed powers, who reign by virtue of special grace; that the masses must follow these guides implicitly, unquestioningly. The inevitable result

Lack of faith in the people.

of this method, under the ideal which suppresses human action and crushes the divine instinct in the human soul, has been poverty, vice and crime. It is the cause of untold miseries under which we suffer to-day in America. Anarchy and nihilism, in their worst forms, are not natural outgrowths from the common people: they are the sure and deadly products of the method of the rule of the few over the many, of the minority suppressing the rights of the majority. Let us put the blame where it belongs. Not the poor men who hang upon the scaffold because oppression has made them mad, but the rulers by might, secure in palace and castle, who fatten on the vitals of the people, they and they alone are responsible for political insanity.

Anarchy and nihilism, products of oppression.

The rule of the many by the few has ever had its main buttress in lack of faith in the masses. "The masses," is the cry, "have not the intelligence and moral power to rule themselves." The methods of aristocracy have to all appearances abundantly proved this proposition. These methods have one aim—the suppression in human souls of God's priceless gift of self-choice. That which aristocracies have most feared is the success of any attempts toward a democratic form of government. Such success would overthrow all the canons of their logic. When brother met brother in deadly strife in "the greatest civil war that ever darkened the earth," the aristocracies of the Old World gazed from palace and castle upon battle-fields with rapturous delight: they cared not a fig for either party—what they prayed for, what they believed, had at last come, the destruction of the one great trial of the new form of government, which, once

Joy of aristocracy over the prospective downfall of the Union.

destroyed, meant peace and comfort for the few, continued wretchedness for the many.

The universal movement, that had its beginning when the morning stars first sang together, was the tendency of the soul toward freedom. The form of government it took was democracy founded upon the principle that *society can rule itself;* that each member of society contributes to the good of all, lives for all, and receives from all that which all can give. Democracy is the shortest line of resistance to human development. A fundamental principle of democracy is the responsibility of each for all, and all for each. If one is weak in the government, if one is weak who has the ballot, who has a choosing power, it means the weakness of all; and it becomes the imperative duty of all to present the needed conditions to awaken the feeling of responsibility.

Democracy.

The goal of humanity is freedom. Freedom comprehends the aim and direction of progress and the personal education of man. Liberty is the right of all men, but freedom is an individual acquirement through search for God's laws and obedience to them. The possession of freedom includes every possible good to the possessor—happiness, citizenship, personal development, and ethical action. *The highest personal right a community can accord to an individual is the liberty and the means to become free.* Liberty is accorded by laws written and unwritten which restrict the way of freedom entirely to personal effort, which place nothing between the individual and freedom but the inherent limitations of personality. The means of acquiring freedom may be summed up in one word—education. True education is the presentation of

Freedom.

The ideal of freedom.

True education leads to freedom.

the conditions necessary for the evolution of personality into freedom. Democracy is the only form of government under which the methods of freedom can be fostered.

Mutual responsibility.

The great central principle of democracy is mutual responsibility. Democracy in its essence gives to each individual the liberty of becoming free; raises no artificial barriers, political or social, between him and his goal. This is the ideal of democracy. Pure democracy does not exist to-day; more than one half of the people of the United States are excluded from franchise. I am speaking solely of the ideal toward which all human progress is tending. Democracy gives the liberty to become free, and the essential means of gaining freedom; this means is education.

The common school.

The highest outcome, and, I say with the greatest reverence, the divinest outcome, of all the ages of human progress is the *common school.* Like democracy, it is still an ideal; it has not come to its own. The only system of common schools of the world to-day is that of the United States, and we have it only in part. The common school is the antipodes of isolation, the antipodes of that method so efficiently used by monarchy and hierarchy to keep the people from loving each other and helping each other.

Meaning of the common school.

The public school in a republic means that in their early life children of all classes, of all nationalities, of all sects, of rich and poor alike, children of both sexes, shall work together under the highest and best conditions in one community for from eight to twelve years; that they shall have teachers who are trained in the art of all arts—the art of teaching; that in the school, before prejudice

has entered their childish souls, before hate has become fixed, before mistrust has become a habit, they shall have influences surrounding them that shall lead to the best work with the best motive of mutual assistance.

Co-education.

Why should boys and girls be taught together from the kindergarten to the university, inclusive? Because they are to live together, to help each other throughout life, and must understand each other. The isolation of sexes in school has begotten mistrust, misunderstanding, false—nay even impure—fancies. The separation of sexes in school is a crime against nature. It is often argued that the sexes differ in intellectual capacity and moral power, and therefore should be separated in education; if this be true, it is all the more reason why they should be together. The strongest factor in education is the reflected light of character upon character.

The social factor in education.

The social factor in school is the greatest factor of all; it stands higher than subjects of learning, than methods of teaching, than the teacher himself. That which children learn from each other in play or work, though the work be drudgery, is the highest that is ever learned. The young man in the university learns more from his mates, of good or bad, than from his professors. This mingling, fusing, and blending give personal power, and make the public school a tremendous force for the upbuilding of democracy.

The social problem in America.

Let us now turn for a moment to the problem of America. We who are in the thick of the fight, in the midst of a struggle which is overwhelming, do not appreciate the tremendous trend of human affairs; the danger signals which fly before us are

unwatched and unheeded. What are we proposing to do? *That which has never yet been done in the world's history.* Foreign colonies have settled in other nations to be ostracized, persecuted, opposed, and downtrodden; but here in America we are bringing together all peoples from all parts of the known world, with all their prejudices born of centuries, each naturally having its own customs, rooted in earliest times and growing with the national growth: the Germans and the French, the Italians and the Russians, the Poles and the Irish, each with their prejudices, with their views of life, producing different customs, political, social, and religious, opposed as earth and heaven. Here they come into our broad continent, and we propose to have them live together, and legislate together for the best good of the whole. No dream of the past, no vision of the progress of humanity, could ever propose such a tremendous problem as this—this blending and fusing of the people of the whole earth in one crucible of common interests and brotherly love. Amalgamation of interests and ideas is the key-note of the situation: if any people or sect, no matter what, comes to America, lives by itself, speaks its own language, refuses to learn the genius of American citizenship, it is weakness to all, and if not arrested, threatens destruction to all.

Mingling, fusing, and blending.

Peoples come with their prejudices; for instance, the prejudice of separate and class education. I have in mind a nation that has given us the best discussions and investigations of education of any people on earth; has given more for the study of education than any and all the rest of the world together; still, they come to this country bitterly

Overcoming prejudices.

opposed to co-education, and would legislate and use every influence to keep boys and girls separate from beginning to end. Peoples come with their ideas of class education, and above all, of sectarian education. They hold that children must be kept apart in their own sectarian schools during the first eight or ten years of their lives, in order that they may be indoctrinated; and all these peoples are honest in their beliefs, and as fixed as they are honest. Fancy the antipodal ideas of a pious New Englander and an equally pious German on the Sunday, or the prohibition question. How shall they ever learn to know each other? When and where? If society is cut into classes following the old plan, they will never meet there; nor in the church, no matter how pious they may be, for the conflict there is as strongly marked. There is but one place where children of all nations and sects can come together, sit upon the same benches, play upon the same grounds, live together, work together, *know* each other, and that is the common school. The principal mission of the common school is to dissolve the prejudices that have been inculcated under the methods of oppression.

The common school, the embryonic democracy.

It is a mistake to suppose that our forefathers came to the new continent with even the faintest glimmer of a purpose to found a republic, or that this idea took definite shape before the Revolution. The republic grew out of circumstances, and these circumstances were favorable: fixed traditions were uprooted; the early settlers left their material surroundings of tradition; they were transplanted into new conditions, where the conflicts and struggles of pioneer life, the subduing of virgin forests, the contests with the aborigines, and friction of differ-

Founding of the republic.

ent nationalities, brought out new necessities and developed new ideas.

Beginnings of the common school.

It is much more of a mistake to surmise that the dimmest outline of a common-school system was in the minds of the founders of America. When the proposition was under way that society should rule itself, thoughtful men made up their minds that society must be intelligent, and that the state must furnish the means of intelligence. This idea took shadowy form in Massachusetts after the Revolution.

The common-school system of Massachusetts owes its origin, as I have said, to no well-defined purpose that the community or state should assume the responsibility of the education of each individual. The methods of the ragged, the hedge-row, and the dame schools were transplanted from England. Rural communities found it less expensive to establish free schools at the public expense. Boston, taking the plan, in general, of the great schools of England, early started a limited system of free schools for boys. The plan of a free-school system was initiated in Massachusetts directly after the Revolution, but its early life was extremely feeble. Private institutions and academies were founded everywhere by religious sects, and in these schools most of the children were educated. The free schools sank to the level of charity schools, to which only poor people sent their children. Those who were well enough off sent their sons to the academies.

Schools of the English pattern.

Free schools, charity schools.

Schools in 1837.

In 1837, to all appearances, the common-school system of Massachusetts was a dead failure; the country schools were taught by the spiritual descendants of the hedge-row and dame school

teachers of Great Britain, or by uneducated and untrained girls. The terms were short, and the teaching miserable. The academies predominated and controlled education, and bitterly opposed anything that looked to the improvement of the common-school system. As I have already said, our forefathers had no plan, no ideal, of a system of universal education, the great apostle of democracy, Thomas Jefferson, excepted. He is the one man who saw clearly the absolute conditions necessary for the success of democracy; he drew an outline of a system which included the primary school and the university, supported by the state. His great plans fell to the ground for a time, throttled by slavery; but the doctrine of universal education lived. Thoughtful men were at work everywhere—men who felt the immense responsibility under the new ideal of democracy.

Thomas Jefferson.

In Connecticut, previous to 1837, educational reformers appeared, who were strong advocates of a common-school system. The most prominent of these men is alive to-day—Dr. Henry Barnard,* of Hartford. He was ably supported in his efforts in Connecticut by Dr. Gallaudet, the renowned teacher of deaf-mutes, by William C. Woodbridge, and others.

The common school in Connecticut and Vermont.

In Concord, Vt., Rev. S. R. Hall had started the idea of training teachers for their work. S. G. Carter, of Massachusetts, vigorously seconded this movement.

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* To no man living does the common-school system owe so much as to Dr. Barnard. He was a pioneer in education before Horace Mann began his work; he has published more works upon education than any other man in the world.

The common school in danger of failure.

But the whole system of common schools was in a state of collapse, and in danger of utter failure, when a great man grasped the situation, and gave his life to the work of promoting the interests of the common school.

Horace Mann.

Horace Mann, born in 1796, in the little town of Franklin, Mass., was a typical New England boy; raised in poverty upon a rough farm, he heard what every boy of that time had ringing in his soul,—"Get knowledge; knowledge is power." He worked upon the farm, braided hats, and studied by the light of pitch-pine knots; made use of the scanty means of the common school; prepared for college; taught school; went through Brown University, and then studied law: he did all this unaided. By indomitable will he struggled toward the tempting goal, and at last found himself on the highroad to success. No man in Massachusetts at that time had such a future. He was the peer of Charles Sumner, his contemporary. Great statesmen were needed; Horace Mann made a success at the bar, a success in politics; he was honored and respected by the most intelligent of his fellow citizens. He was gifted, like all inspired men, with a deep insight into the future; he comprehended the tremendous responsibility of citizenship; he felt the imminent danger in the outworking of the new plan of democracy; *without intelligence among the people he knew that democracy would be a failure.*

Democracy of Horace Mann.

Horace Mann was a thorough democrat; he believed in the people; he believed in the new form of government; and he knew that the plan was certain of failure unless it was supported by intelligent people. The success of the common school was to him the one hope of democracy.

He aroused some enthusiasm among educated people in regard to the common schools, and was influential in having a board of education appointed by the General Court. This board of education was appointed to investigate the public-school system, and see what could be done to promote its welfare. A man was needed to guide the investigations. Horace Mann, as I have said, had every prospect of a famous career, — everything that the state and nation could give was open to him,—a high place as a legislator and statesman. But he knew in his soul that something must be done, that something must be done which could not be done in legislative halls, which must be done with the people. The board of education, of which Horace Mann was a member, selected him as its secretary, and begged him, with a full comprehension of the sacrifice demanded, to give his life to the work. In doing so he must renounce all ideas of fame and honor; he must give up his chosen path; he must go into a fight in which there was no glory, in which he must sacrifice every personal ambition. He accepted the office at the meagre pittance of $1000 a year, and in 1837 began his work.

Board of Education appointed in Massachusetts.

Horace Mann chosen for its secretary.

He found in Massachusetts what has been found in every state: the idea of the responsibility of communities for each child was repugnant to the people. An echo of that ancient cry, "Am I my brother's keeper?" finds easy lodgment in the hearts of unthinking people. There was in their minds little sense of responsibility. Most of them were farmers, hard at work at the problem of self-preservation. The light of the common school, as I have said, was just flickering, ready to expire.

Rousing public sentiment.

Indifference of the people.

I cannot in a few words give you an adequate idea of the self-sacrifice and devotion of this Hero of Education. He went all over the State of Massachusetts, and though an incomparable orator, with great magnetic power, he was met on the part of the people by sullen indifference; he talked in schoolhouses, many times, to audiences of a half-dozen people. He strove with all his eloquence to convince them of their responsibility in education.

Horace Mann's visit to Europe.

Horace Mann painfully realized his own limitations, his own lack of knowledge in the direction of education. He sought everywhere for books, but found few. He visited schools, and found less to assist him. "Is there," he thought, "any place in the wide world where I can get help for the children?" He had heard of the schools of Europe, of Germany and Scotland in particular. There were no means of paying his expenses; he sold his precious law library, took the money and visited the schools of the Old World; went from schoolhouse to schoolhouse, observing and studying. He returned, and in his famous Seventh Annual Report told the people of Massachusetts what he had found. I can give the substance of his discoveries in a few words:

What Horace Mann found in Europe.

(1) He found that corporal punishment could be greatly diminished. The essence of method in Massachusetts consisted of the ferule and the strap, without which, it was believed, there could be no education.

(2) He found that the children could learn to spell better by writing words than by the common method of oral spelling.

(3) That there were improved methods for teaching reading; that it was unscientific and wrong to

learn the names of letters as a means of taking the first steps.

He presented his propositions for reform, as I have said, in his famous Seventh Annual Report. He had discovered something for the children, something better, something sweet and good and pure. His advocacy of "newfangled notions" met the usual fate: the pedants, the disciples of quantity teaching, were there to meet him and to deny every proposition.

Opposition to Horace Mann.

One would fancy that the school-teachers of Massachusetts, especially of the intelligent city of Boston, would have received him and his discoveries with open arms; but far from it. They denied *in toto* every proposition he made; they proved to their own satisfaction that that which he brought was nonsense; that their ways were the best ways; that the strap must be used; that the "A, B, C's" must be taught; and that the children must go through the dreary round of oral spelling before they could learn to spell. The battle was a fierce and prolonged one: the people were aroused against the innovations, and accused the children's champion of heresy and fanaticism.

Opposition to the new ideas.

Fortunately there stood at the back of Horace Mann a few of the most intelligent people in Massachusetts. He had one great advantage—he commanded the profound respect of thoughtful men of the time. From the opposition to his simple and reasonable propositions he learned a valuable lesson: without intelligent, trained teachers there could be no progress in schools; and to this end he worked for years against the fiercest opposition. The believers in isolated education opposed, and have always opposed, the common-

school system; the bitterest opposition came in organized form from the academies.

Opposition of the academies.

When Horace Mann proposed that teaching should be a profession, and that teachers must be educated like ministers, lawyers, and doctors, a howl of derision, of profound contempt, went up from the private schools, was echoed by the colleges, and sustained by the people. Quantity teaching needed no preparation except firmness and brutality, supported by the ferule and the strap. The "new idea" would spoil the "business," as it did that of the Ephesian artisans.

Founding of the first normal school.

After a heroic struggle against pedantry on one hand and stinginess on the other, this leader of democracy founded, near the old battle-ground of Lexington, the first normal school in America, in 1839, and put it in the hands of Father Pierce, another hero in education. Then, one after another, normal schools were established in Massachusetts.

First normal school in New York.

The pioneer work of Massachusetts had a great influence over the other States, notably New York, and after a prolonged struggle a normal school was established in Albany, N. Y., in 1843.* Three hundred academies in the Empire State fought tooth and nail against the founding of this school; their cry was: "We are sufficient for all these things; we can train teachers." But in spite of all opposition the new idea grew, because it was true; because people began to believe that the establishment of the common school meant the perpetuity of the republic.

The establishment of normal schools was the first great step in the forward movement of the

* David P. Page, principal.

common-school system; it meant better teaching. All the normal schools of the United States took their pattern from the schools established by Horace Mann. The first normal school of which a woman was principal was founded in St. Louis, Anna C. Brackett, graduate of the Framingham Normal School, being at one time its efficient head. The early period of the common schools was one of chaos, of dim ideas, of glimmerings, of flickerings; the people had to be convinced of the necessity for common schools. The idea of expense frightened the people; the opposition, as I have said, of private institutions was great, and colleges and universities, as is the case to-day, with some notable exceptions, had little or no sympathy for them.

Anna C. Brackett.

The second period of the common schools may be called the period of organization, the building of schoolhouses, organizing systems of education, making courses of study, grading schools, getting all the machinery necessary for effective school-work.

Period of organization.

Then followed a period of groping after means and methods of teaching; a strong suspicion of something better was aroused in the minds of people and teachers. The evolution of the common-school system covers a period of less than sixty years; in Illinois, less than forty years; and in the South it has been organized since the war.

Better methods.

The rapid growth and development of the common-school system of the United States has no equal in all history: born of the people, supported and nourished by the people, it has steadily made its way into the hearts of the people, and has become an absolute necessity in the growth and perpetuity of our political institutions.

Common school, a genuine product of democracy.

Centralization in the control of schools.

In the Old World, where public schools, not common schools, have been established, the system is entirely controlled by central power, by the minister of education, by one intelligence, to which everything is subordinate. There are great advantages in the matter of organization, and a great saving of time, to appearances, in such a plan of central power. The authority, for instance, of the cultus-minister reaches every school in Prussia; he can determine the text-books, the course of study, and the method; but in our country we have no central system. The citizens of each school-district, the citizens of a city, have absolute control over their schools; there is no domination from the centre; even the State assumes very little control of the schools, outside of enabling acts, and limitations in the matter of time and general subjects of study. This is probably the best illustration in all history of true democratic growth. What the schools are, their value in education in the district, is determined by the people themselves. In the case of two adjacent districts, one may have excellent schools and the schools of the other be in a very inferior condition. This, superficially considered, would argue the superiority of a central system; but the democratic mode of growth is from within, and admits greater possibilities than any other plan.

Democracy in the control of schools.

The democratic plan the better in the long run.

A central system easily becomes fixed. For instance, to-day the schools of Germany, pedagogically speaking, are far better than the schools of the United States; in fifty years the schools of the United States will exceed in value the schools of all the world, because our plan tends to originality and to research—it brings out the best in all. With

all its defects, the common school of the United States stands, to-day, as incomparably the noblest and best institution on earth. It has accomplished vast results; the common-school system is the heart of the republic. But the high accomplishment has not been through methods of teaching or subjects taught: it has consisted principally in the great social factor,—the mingling, blending, and fusing of all classes of society.

What remains to be done?

It is, then, for every thoughtful person to consider with the greatest care the present situation of the common-school system, and what can be done to make it better. To this subject I invite your attention. What has been done and what remains to be done? Viewing it from the standpoint of the growth of a great central idea, of the partial realization of a divine inspiration, the common-school system of the United States is exalted in the highest degree. But when we consider what is to be done, we can see plainly that we have made small beginning; that the common school is still in its swaddling-clothes; that it has been started; that the best and most favorable criticism that can be made upon it is, that it can be made far better than it now is; that it must be made better; that it is not equal to the demand,—the salvation of all the children.

Youth of the common-school system.

Lack of faith in the education of children.

Democracy means the responsibility of all for each; the common school is the direct exposition of this fundamental principle; common education is the means of freedom. The children of to-day are in our hands; whatever we do for them will be the future. Our lack of faith in this direction is the greatest infidelity. To use a common illustration: a Kentucky farmer will look at a hundred

colts and say, "I will train every one of them to become a useful horse." We look at the children and decide that we can save but a few of them; that many of them must become criminals, many of them a burden upon society; that many of them will enhance vice, and put barriers in the way of our political institutions. We must believe that we can save *every child*. The citizen should say in his heart: "I await the regeneration of the world from the teaching of the common schools of America."

The foundations of the great American system of education into democracy have been laid by devoted patriots. The people believe in the common school. The necessary organizations are now ready for a great advance; the line of progress is plainly before us; that line is parallel with the great lines of progress in this century that have been marked by searching, prolonged investigation, and profound study—study that has compelled the natural forces to yield themselves to the service of man.

(1) The same kind of study, the same wisdom, earnestness, and zeal, must be given to the study of the being that "God made a little lower than Himself,"—the child. Already careful investigations in child life are being made by humanity-loving scientists all over the civilized world; wonderful results are at hand.

Necessities of the common school.

(2) The conditions must be discovered and applied, by which every child may be developed into the full stature of manhood or womanhood. All sciences have been reformed, and some, revolutionized within a few years; means for the genuine study of history have been multiplied

literature, sweet, pure, and good, is made accessible to every child; art with its treasures stands ready to help. Compared with the paucity of means of even fifty years ago, the supply is unlimited.

(3) The conditions of knowledge and action must be adapted to the development of the whole being. This adaptation, general and individual, is called method, the essential factor in the art of educating.

The science of education.

No subject of inquiry, study, and investigation is comparable to the science of the soul and the laws of its development. This is the science of education, the science that comprehends all sciences. Like all other sciences, if we except mathematics, there is an infinity of knowledge yet to be found in this comprehensive science. Progress in education means a knowledge of the science of education and its application; it means that teachers must be educated, cultured, and trained into the most important of all professions.

What stands in the way of the one precious thing on earth—the freedom of the soul, the advancement of civilization, the happiness of man? I answer, first of all, tradition and its methods. It is impossible to measure the tremendous influence of tradition. It is very difficult to draw the line between education and heredity, but it is far more difficult to draw it between tradition and original personal power. We are at best creatures of tradition, controlled by the past, often bound hand and foot by the fixed habits of mankind; and this influence is dominant to-day in our public schools.

Influence of tradition.

Methods of aristocracy in our common schools.

The methods of the few, in their control of the many, still govern our public schools, and to a great degree determine their management: the method of the prison, torture, police, and standing army survives in corporal punishment; the method of bribery,—in reward and prize giving. Both of these immoral methods are absolutely useless; they are the outcome of quantity teaching and the makeshifts of unskilled teachers. Given devoted trained teachers, together with right surroundings and the right educative work, there is absolutely no necessity for either corporal punishment or the bribery of rewards.

Method of mystery.

The method of mystery still exercises its fearful power,—the inoculated belief that there is something occult and mysterious in knowledge. The height of art is its simplicity, and the same can be said of the art of teaching. What I mean by the control of mystery is illustrated by the attitude of the people toward education. Let a teacher in a country school teach that which a farmer most needs upon the farm,—practical chemistry; let him teach soil, physics, meteorology, zoology of the insects that infest his crops; let him teach arithmetic sensibly by measuring and weighing,—and the farmers would call an indignation meeting and put out a man holding and teaching such new-fangled notions. By learning they mean some mysterious process foreign to them. It does not readily enter their minds that that which is most practical is most logical, and that the old teaching of quantity, the mysterious pedantry of the school-teacher, who is supposed to know so much, is a relic of barbarism, and should hold the same place in the world of affairs as the sickle and the scythe.

Common sense ruled out.

I have used the farmer simply as an illustration: the same false ideas pervade all society to the detriment of education. The chemistry needed in the kitchen, the physiology that pertains to health, the physical training that develops a sound body, the history and civics essential to citizenship, the necessity of practical ethics, the relation of handwork to the brain and to true success, are little appreciated; while memorizing a jumble of words, grammar that will scarcely be used for lack of thought, a mastery of that incubus upon English education—the intricacies of unphonetic spelling, are the idols of the people, and, alas! of the majority of teachers.

Common things not study.

The aristocratic idea of charity is still a potent influence in education. Our school system began as charity schools,—charity schools such as the Volksschule of Germany. Many wealthy people who have the traditional or parvenu feeling of class distinction look to-day upon the common-school system as a charity, and hold that there should be one education for rich children and another for the poor; that the children of the rich should not mingle with and be contaminated by the children of the poor. I have had much to do with both classes, and I wish to say here that in my contact with the poorest children I have found as much of intrinsic morality and vigorous mental power in them as in rich children; this false idea of contamination is born of the past, a reappearance of the old-time aristocratic idea of separation and isolation. In a good school, with excellent teachers and the right surroundings, there is no more danger of contamination than is to be found

Making the common school a charity school.

in the ordinary home and class environment of children.

The other day I heard an excellent lecture from the distinguished superintendent of schools of the State of Missouri, in which he urged better things for the children—more of science, a better knowledge of nature and of history. A gentleman stepped upon the platform to thank him for his lecture, at the same time remarking, "What you say is well enough for the *rich*, but it is not for the *poor*." I would not repeat this saying if it did not so well voice the sentiment of a large class of people, who hold that there must be one system for the rich and another for the poor; that the common school is a charity, and must be governed accordingly. This is the essence of the old traditional idea that has done its work so effectively in the past, stultifying the reason, and suppressing the soul.

For the rich and not for the poor.

When in American society classes become permanent, and the children of these classes are educated in separate schools, the doom of the Republic is sealed. There can be no separated classes in a republic; the life-blood of a republic must stream from the ground up; there can be no stratified society.

Separation into classes the doom of the Republic.

No child, no citizen of a republic, can be educated into citizenship outside of the common school; *the common school is not a charity; it is the inalienable right of every child, and common education is the imperative duty of every community.* On a lower plane we may look at universal intelligence as the one means for the preservation of the republic; society, in order to preserve itself, must develop the highest character in every child.

Education not a charity.

The charity idea obtains largely among manu-

facturers and people who depend upon laborers and servants. I once talked with a gentleman upon a religious subject; he seemed to be imbued, or thought he was, with the spirit of Christ; he was a nail-manufacturer. When I spoke to him about the education of his employés, suggesting that they should have better opportunities for personal improvement, he said: "But that would spoil them as laborers. I must have employés; there must be a class of workers." This Christian gentleman was entirely willing to suppress human souls *in* the interest of nails.

Christianity and manufacturing.

The method of quantity teaching is without doubt the most prominent. You will remember what I have said of this method: that its means are the most effective in keeping children from anything like a search for the truth, and from a realization of their own liberty—the method of text-books, page learning, per-cent examinations, with all the countless devices and means which serve to make quantity learning the end and aim of education.

The method of quantity teaching.

When the common school was founded there was little or no knowledge of or belief in a science of education. Most of our teachers took their patterns from England, where at that time the discoveries of Comenius and Pestalozzi had kindled no life. The old methods naturally took the field, and held their ground, and, alas! still hold. The great majority of the people are firm believers in quantity: they insist that their children shall "go over," "go through," but particularly shall "finish." They measure education by the yard and weigh it by the pound. The people of to-day are the people

Quantity teaching opposed to the science of education.

of yesterday, their fixed ideas the inheritance of their teachers' teachers.

Colleges demand quantity.

The colleges demand quantity; they do not ask applicants, "Who are you? What have you done? What can you do?" But, "How many pages have you learned? Have you read Virgil? Xenophon? Homer? Come in and learn some more words."

The strongest indication that quantity teaching is in the ascendancy is the profound disbelief of the people in anything like a science of education. I have not time to prove that there is a science of education. If, however, there is no such science, then all the other sciences are myths and delusions. Science is organized knowledge of law; and to deny that there is a science of education is to deny that the development of human beings is governed by law.

A leader of aristocracy does not believe in a science of education.

Robert Lowe (Lord Sherbrooke), while at the head of the English Privy Council, and Chairman of the Education Committee, was asked to support a movement for the establishment of chairs of pedagogics in universities. "There are no principles of education," said this child of tradition. Less than fifteen years ago a distinguished head of a great university declared that all there is to pedagogics could be learned in an hour and a half! It is well for me to say here, that the gentleman has changed his mind most decidedly; indeed, he is a prominent leader in the so-called new education.

Contempt shown by universities for the science of education.

The first chair of pedagogics in America.

Colleges did not recognize this science until within a few years. The first Professor of Pedagogics in America, Miss Bibb, was appointed in the University of Missouri within a few years.

The substantial disbelief in a science of education, and the almost universal indifference in

regard to it, has one cause, and that cause is quantity teaching; the stimulus to the drudgery is the strap, or, worse, rewards and prizes. A teacher with a conscience, an artist teacher, cannot do such menial service: it would be like requiring a Raphael to paint a board fence. If quantity teaching is ideal teaching, then the plainest deduction is, there is no science of education.

Quantity teaching demands no professional training.

By far the greatest barrier to making the common school what it should and can be, by no means springs from active opposition to the system or from the patronage and pulls of pot-house politicians: *the greatest barrier is the profound indifference of the most intelligent people in regard to the possibilities of radical improvement.* This indifference has been enhanced until within a few years by the influence of colleges and universities, in which quantity instruction has had full swing. The average member of a school board often fancies that he knows all there is to be known about teaching; his measure is the quantity standard, acquired in his own education, which he rigidly enforces, crushing every effort toward quality work.*

Member of a school board knows all about education on the quantity side.

The social and political standing of teachers indicates the general depreciation of anything like a science of education or an art of teaching. When a discussion of an educational question is provoked, that of "fads," for instance, the opinions of educators are not generally invited; quantity teaching has instructed every citizen in the exact needs of the schools—quantity is the standard of judgment, and the "3 R's" *limit the education of freemen!!*

Fads.

* "We have excellent schools and no incompetent teachers" exposes the standard of education on the part of an incompetent member of a school board.

No science of education from the quantity standpoint.

The people generally have never felt the quickening power of scientific teaching: they believe that their children must submit to the same process that they have endured; they judge teachers by their power to go over the most ground *thoroughly*. To them there is no need of a science of education, and from the quantity standpoint this judgment is perfectly logical. Scientific teaching means quality of mental action; it means the shortest line of resistance in the advance toward truth; it means the development of mental and moral power—a power that comprehends conditions and overcomes obstacles. I repeat, profound public indifference and an alarming ignorance in regard to the possibilities of education are the greatest obstacles to progress.

Quality is freedom.

Quality is freedom. Let the quality of mental action be right, quantity will take care of itself. The principal cause of so many dullards is quantity teaching. Quantity teaching is strongly intrenched by incompetency. An imperative demand for scientific teaching would throw large numbers of present school incumbents out of business, or make them burn the midnight oil to an extent hitherto unheard of.

Quantity teaching the politician's opportunity.

The quantity plan is the politician's opportunity. The state pays more money for schools than for any other purpose, except prisons, penitentiaries, poorhouses, and criminal courts; the schools present the most places to fill with "friends," whose acquirements, as a rule, are of the lowest order. Thousands of girls without culture, with very deficient education, manage, after repeated trials, to pass cram examinations met by quantity drills—examinations that are no tests whatever of ability

to teach. These same girls, the daughters, friends, and relatives of ward politicians with a pull, are put in charge of fifty or more immortal souls, to repeat as best they may the wretched process of quantity teaching. Very few men remain in the profession on account of the low salaries, the precariousness of positions, the catering to public opinion, and, worst of all, the demand for fawning vassalage by corrupt or ignorant political bosses.

Horrors of democratic evolution.

The evolution of democracy must needs have its horrors; patriots will bear, and at the same time strive to overcome, them. But the culmination of horrors is to place the interests of innocent children in the hands of expediency politicians. Let them steal public money, rob treasuries, and enrich themselves by boodle; but in the name of High Heaven let them keep their corrupt hands away from the priceless treasures of home and the dearest hopes of the future.

Enemies of the common school.

Although the initial battle for the common school has been fought and won, still it has many open and secret enemies. Who are they? I do not believe that there is a man or woman in our republic, to-day, who has enjoyed the benefits of the common school but is its warm supporter. If there is one, I have never seen him nor her. First, the opponents of the common school are those who were born and bred outside of the atmosphere of liberty, who have had environment and traditions that compel them to believe as they do. It would be strange indeed if the most influential newcomers, whose education has been received in surroundings entirely opposed to the spirit of liberty, of which the common school is the main buttress, did believe in our sys-

tem of schools. They are honestly opposed to the system, and should be respected for their honesty and met by honest argument.

Method of isolation.

The fundamental method of the Old World education is *isolation;* it is supported by no particular party nor sect; the people educated in this method believe in it from their habit of life and the tradition of ages. Why should they understand the genius of American liberty? Why should those who have become habituated to class education believe that the stratification of American society into fixed classes means sure death to the republic and the future hopes of democracy? Class education means that the children of one class would become indoctrinated with the opinions, political and religious, of other classes; that fixed beliefs would become unsettled.

Common school destroys caste.

So far as the destruction of these fixed ideas is concerned, the argument is logical: the common school destroys caste, makes democrats, annihilates the domination of the few; but so far as religion pure and undefiled is concerned, the inference cannot be sustained. Forty-seven hours for teaching and training in the family per week; twelve hours of the holy Sabbath for worship in church, Sunday-school, and at home; and *twenty-five hours* of mixed society life under guidance in the public schools: is it possible that the strong tenets of any religion can be overcome in a community where religion is never mentioned, but continually practised? Of all places in the world where children can practise religion, the school is the most favorable: here are the weak, the poor,—yes, the vicious; they come for help. "He that doeth righteousness is righteous." School is the

place for *doing*, not preaching, righteousness. No, the purpose of the opponents of the common school is not to teach religion, but to preserve the integrity of aristocratic power, by isolation and the consequent maintenance of distinct classes.

Common school the best place to practice religion.

The marvelous growth of the fundamental democratic idea—the common school—is unparalleled in history. The traditional plan of private, class and sectarian education has been overturned. The proposition to give every child a good education at the expense of the community and state has been established upon a permanent basis by the votes of the people. Millions of money are freely given every year for common education; open and direct opposition, that marked the early stages, is becoming less and less. Glorious as this work is, it is but the foundation for the superstructure, the initial step to improvements infinitely better.

Wonderful growth of the common school system.

The progress of the common school imperatively demands the application of the science of education. The methods of quantity instruction have reached their utmost limits; the time for quality teaching has fully come. What stands in the way? First of all, the profound indifference of intelligent people in regard to better teachers and teaching, an indifference resting upon an obstinate disbelief in the possibilities of the art of teaching. It is a product of quantity teaching, from which are derived the prevailing standards of intellectual mensuration. The results of this indifference are: the withdrawal of large numbers of children of the so-called better classes from the common school, and a growing tendency to put it into the category of eleemosynary institutions. We hear much

The science of education.

adverse criticism in regard to private sectarian schools, while little or nothing is said about the still greater number of children isolated from the masses in education by rich parents. The reason for withdrawing children from the common schools is that they are not good enough: this reason seems valid. It would be so indeed if the sole cause of the defects in the common schools was not the indifference of the very people who want better schools than the public affords.

Indifference of the people.

Further, whatever duties the body politic neglects become the prey and spoil of the pot-house politician. Many of the common schools in this republic are managed and controlled by a class of spoilmongers who do not have the faintest idea of education, who indeed do not care what becomes of the schools if their patronage is not touched. Their prey is the innocent little ones; they strike at the very heart of the republic.

Business methods.

If any business in the world, any railroad, bank, store, or manufactory, were conducted upon the same principles (?) that obtain in the management of schools in most of our large cities and in many small districts, hopeless bankruptcy would be the inevitable result. Superintendents are too seldom chosen for professional skill or executive ability, and when they are, the school boards take away from them every vital influence that would make them efficient managers. The vast majority of teachers have not the slightest professional training or the faintest idea of the science of education; thus quantity cram is the rule, and quality teaching the exception. Every other business in the world requires experts but the care of immortal souls ! !

Superintendents.

Experts required for every work in the world except teaching.

The great-hearted city of Chicago pours out six

millions of dollars yearly for its schools; but there is little or no question of whether the money shall be spent for *salvation* or *patronage*, for one per cent dividend or a thousand. Let teachers move in the direction of the divine art of teaching, and a commanding *halt* is heard from authority. Let experts examine the cramming methods that form the bulk of most school-work and condemn them, the result is a prolonged howl of indignation from the school-boards, public teachers, and often from school periodicals. The rule is that the greatest popular satisfaction is evinced for the poorest school system.

Chicago gives $6,000,000 yearly for schools.

Tenacity of quantity teaching.

Whether from design or not, the indifference of the people, the patronage of politicians, the weakness of supervision, and the inefficiency of teachers, furnish the best possible means of degrading the common school, putting it upon a charity basis, weaning intelligent people from all active interest and sympathy, and leading to the downfall of the most precious institution which was ever established by a free people.

Indifference of the people toward the fundamental cause of the defects in the public schools.

I have not overdrawn the indictment. There are beautiful streaks of light everywhere amid the general darkness of unprofessional teaching, proving beyond all doubt that the people can make every common school a perfect means of developing true manhood and womanhood. An effective school means an educated, cultured, trained, devoted teacher. To-day in most communities there is very little *discrimination* between an excellent teacher and a poor one; too often the latter has a marked advantage. There is not a coin small enough, ever stamped by the hand of man, to pay the salary of a poor teacher; there is not gold

Trained teachers.

A poor teacher.

Value of a good teacher.

enough in the mines of the world to measure the value of a teacher who lifts the souls of children to the true dignity of life and living. Put such teachers in the slums of our great cities, supply them with every necessary means, and we would soon find that "an ounce of prevention is worth a ton of cure." The right teaching, the possible teaching, would diminish the attendance upon bridewells, prisons, reformatories, almshouses, lunatic asylums; would lessen the number of voters that can be bought and take away the following of corrupt politicians; would insure the perpetuity of the republic, the hope of humanity. What stands in the way? *The indifference, the lethargy, the lack of active interest, on the part of the good, noble men and women.*

"An ounce of prevention is worth a ton of cure."

Little thought given to the science of education.

Nothing will reach the hearts of fathers and mothers like the prospect of better things for their precious little children; yet many a mother, who would die for the sum of her earthly treasures,—her little ones,—never gives a thought to the possibilities of an exalted life for children by means of better education.

The time has come, the hour is here, when the loving sympathy that so richly abounds for charity, for the saving of beings who are lost from neglect, must be turned upon the infinite possibilities of child nurture and growth.

America for the whole world.

I have argued that the inefficiency of our common schools is owing to the traditional methods that have been the effective means of keeping the masses in subjection through the long ages of human history. God has made America the schoolhouse of the world—nay, its hospital: to our land have come a vast multitude, marred and

scarred by the selfishness of the few; here they bring the wounds of tyranny. They have come to be healed: let them come. But we who are imbued with the genius of freedom, we who have fought under Old Glory, must heal these wounds, must quicken stagnant blood, and revive despairing hearts by a breath of sweet liberty. *We must do it*, I say, else our republic dies, and with it the hopes of freedom for centuries.

Perfect toleration.

Let us welcome all religions; let us freely accord to all believers the right to worship God as they please, and, disbelievers, to deny His existence; but we dare not, must not, allow the methods of aristocracy to ruin all we hold dear.

"Who possesses the youth possesses the future."

"Who possesses the youth, possesses the future," sounds in our ears. Who should possess the youth? Not the aristocracy, with its long record in human subjection and slavery. No party, no creed, should possess the future. The truth, and the truth alone, should possess the youth: "the truth that shall make" His children "free;" the truth of the eternal, loving God and Father of us all. Who possesses the truth in its richness and fulness? None in the past. Who have applied it? Let prisons, dungeons, torture, poverty, woe, misery, and the outer darkness of ignorance answer. We may hold a pure religion, we may respect each other's opinions, we may have the perfect tolerance of universal love, but while we know that the path of progress has been strewn with the wrecks of theories, we dare not fetter the souls of children with a fixed and implicit belief in any theory. We must believe that there is truth enough and power enough and love enough to carry the bread of life to every hungry and needy soul. The methods of aristoc-

Enough for all.

racy have not done this, and cannot do it; but the perfect love born into the world upon the hills of Palestine, when applied, can do it,—the love that is filled with the sweet gospel of the Fatherhood of God and the brotherhood of man.

Respect for personal rights.

The spirit of democracy respects all rights of parents as sacred, except the right to deprive a child of a good education; it never compels a parent to send a child to the common school; it might in the interests of self-preservation, but it does not. Every parent should be left perfectly free in the choice of a school for his children.

Attractive better than compulsory education.

Attractive is far more powerful than compulsory education. The common school can be made the best school, in every respect, in the world. Everything is ready to this end, except one thing, and that is the introduction of scientific teaching. The organization is ready, the buildings have been erected, the money is paid: that which awaits is the method of democracy,—that education which shall set the souls of children free.

It is no dream or illusory vision, the realization of a common school, perfect in its appointments, with the means for the highest and best education at hand. All is ready when the people are ready to move, to demand that the methods of quantity shall go, and the methods of quality shall come. Unrealized possibilities of human growth are the infinite line of march.

What every common school should be.

A school should be a model home, a complete community and embryonic democracy. How? you ask. Again I answer, by putting into every schoolroom an educated, cultured, trained, devoted, child-loving teacher, a teacher imbued with a knowledge of the science of education, and a zealous, enthusi-

astic applicant of its principles. Where shall we find such teachers? They will spring from the earth and drop from the clouds when they *hear the demand.* We have asked for quantity teachers, and they have come by the tens of thousands. Now, let us demand the *artist teacher,* the teacher trained and skilled in the science of education—a genuine leader of little feet.

Where shall we find good teachers?

Nothing that is good is too good for the child; no thought too deep; no toil too great; no work too arduous: for the welfare of the child means happier homes, better society, a pure ballot and the perpetuity of republican institutions. Not only must the people demand the artist teacher with an authority which will admit no denial, they must also demand that the methods of aristocracy, which have degraded and debased mankind, be totally eliminated from the training of citizens; instead, let us have a doctrine of education which means freedom to every child. I commend to your careful study the theory of Concentration, a theory that makes personal liberty the path to universal freedom.

I have said these words "with malice toward none, and charity for all." Fighting for four years, as best I could, for the preservation of the democratic ideal, a teacher of little children for nearly forty years, I believe four things, as I believe in God—that democracy is the one hope of the world; that democracy without efficient common schools is impossible; that every school in the land should be made a home and a heaven for children; fourth, that when the ideal of the public school is realized, "the blood shed by the blessed martyrs for freedom will not have been shed in vain."

Conclusion.

QUESTIONS AND SUGGESTIONS FOR THE STUDY OF THE THEORY OF CONCENTRATION.

The Theory of Concentration as presented in these pages is a *working* hypothesis of a doctrine of education: a hypothesis to be proved or disproved, in part, or as a whole.

The following questions and suggestions are for the purpose of assisting students in their *scientific* investigation of the theory. Many of the questions are not answered in this book; they are questions, however, which bear directly upon the principles enunciated. Students are requested to understand thoroughly each statement, and then show it to be true or not true.

Chapter I.—The Child.

1. What books upon Child Study have you read?
2. Have you ever closely observed a child during the first three years of its life?
3. What is it to know a child?
4. Why is the child the "central problem of the universe"?
5. Is it true that "the child is born deaf, dumb, and blind"?
6. Define, psychologically, "I see," "I hear," "I touch."
7. If a child is born totally blind, can he ever have percepts or ideas of color?
8. Explain. "No simple energy (elementary idea) can ever enter the child's body without first *touching* the end organs."
9. Does light *touch* the eye, and sound the ear?
10. What is the function of the brain?
11. Can there be any act of consciousness without a corresponding physical act of the brain? Discuss.
12. Can idiocy be explained as weakness of the brain?
13. Test the truth of the statement: The physical organism determines the limit of personal development.
14. What is meant by elementary ideas?
    (*See "Sensations," "Percepts," "External Stimuli."*)
15. Explain the external energies of color and sound.
    (*Units of elementary ideas are individual concepts.*)
16. What are spontaneous activities?
17. What is instinct? Intuition?

18. What effect has music upon a child?
19. What is rhythm? Music?
20. What is the music of nature?
21. Why are a child's individual concepts obscure?
22. What is fancy to the child?

Recall carefully the fancies of your childhood.

23. Did you love stories? Do you remember the stories told in your childhood? What effect had they upon you?
24. What kind of stories did you hear?
25. What is the educational value of myths?
26. What relation have myths to human evolution?
27. In what sense are myths true?

A myth may be true to a child while a percept may be a lie to him.

28. What relation has myth to history? To science? To religion?
29. What is Santa Claus to the child?
30. How does myth change to reality?
31. What are the child's first lessons in civics? In history?
32. What are the kindergarten and school to the child in the study of civics and history?
33. Give your own experiences of early life.
34. What teachers did you like best? How did they govern?
35. Is it true that every child is born a naturalist?
36. Give your own experiences with animals, when a child.
37. What animals did you like?
38. What animals did you fear? Why?
39. What pets did you have?
40. How many animals did you know?
41. What did you know about the habits of animals?
42. Name the plants and trees that you knew in early childhood.
43. Did you ever plant seeds?
44. What were your favorite flowers?
45. What did you learn about the sun?
46. Could you foretell a storm?
47. What did you know about soils, stones, and rocks?
48. Recall the plays in running water.
49. Describe carefully the surface of the earth around your early home.
50. Make a sketch of it.
51. Is it true that every child begins spontaneously the study of geography, geology, mineralogy, physics, chemistry, botany, zoölogy, anthropology, and history? Did you ever begin these subjects, one and all? How did you begin them? What effect had these early studies upon your education?
52. Did you ever watch a child who was learning to walk? Describe the process.
53. Give your observations, if any, of a baby's learning to talk.
54. What is the law of the mind by which a child learns an oral word?
55. What is the true meaning of "natural method"?
56. Is it possible for a child to learn to write by the same method by which it has learned to talk?
57. How does a child study form?
58. What spontaneous preparation does a child make for the study of number?

59. How does a child manifest a perfect unity of thought and expressive action?

60. "There never was such a thing as a *lazy* child born on earth." Discuss.

61. When is a child still?

62. How does a child begin manual training?

63. What did you like to do when a child? Did you play in the sand? Build houses? Make cakes of sand? Construct mill-dams and mill-wheels? Dress dolls? What else did you do?

64. State the main points in this chapter.

65. The tendencies of the being are manifested by the spontaneous activities, and these tendencies point the way to the means and method of all after education. Discuss.

Chapter II.—Central Subjects of Study.

1. Give all the definitions of education that you know. What definition do you prefer? Why?

2. What is meant by the "economy of energy"?

3. Discuss: "The fundamental law of education is self-activity."

4. Give all the definitions of teaching that you know. Which do you prefer? Why?

5. What is the difference between *teaching* and *educating?*

6. How is energy wasted in education?

7. What is the greatest economy of energy in education?

8. Give your own experience in wasting self-effort? What studies have done you the most good? What kind of teaching has helped you the most?

9. What is the hypothesis of Unity of Subjects?

10. Discuss: All study is study of creation; creation is going on now.

11. What is the intrinsic action of the mind?

12. Give all the definitions of geography that you know. What definitions include other subjects? What definition excludes all other subjects?

13. What are the relations of geography to geology?

Geography is the result of geology; geography is a phase of geology; geology is the history of the changes of which geography is the result. Discuss.

14. Define geology. What are the relations of geology to geography?

15. Can one subject be studied without the other? With which subject should a pupil begin? Why?

16. Geology is *causal nexus* of geography. Explain Prof. Chamberlain's beautiful statement: "Do you know the indications of 'babyhood,' 'adolescence,' 'maturity,' 'old age,' 'decay'? In which state is the surface which surrounds you?"

17. Can you read the history of a characteristic surface? Why not?

18. What means have you near at hand of studying geology and geography?

19. "The fundamental product of geography is an individual concept of the earth's surface, or any part of it." Explain.

20. How are such products acquired?

21. What is the place of observation in the study of geography? Of

imagination? By what means is observation developed? Imagination? What is the chief use of books in studying geography? Of maps?

22. Is the real study of geology and geography always interesting?

23. Give all the relations of geology and geography that you can think of.

24. Define mineralogy. What relations has mineralogy to geography and geology? What opportunities have you for the study of mineralogy?

25. Give in detail a method of teaching geography, geology, and mineralogy. Adapt the method to the grades. Describe the materials to be used, and where they may be obtained. Describe an ideal text-book upon these subjects?

26. Everything changes; mind and matter: nothing remains identical with itself for two consecutive moments of time. Prove or disprove the latter statement.

27. All study is the study of changes in mind and matter. Changes in matter are results of energy acting through it. All changes are caused by the action of immutable laws. All study is the study of laws acting in mind, and acting through matter. Are these statements true? Why? Why not?

28. What relations have physics and chemistry to mineralogy, geology, and geography?

29. What is the difference between chemistry and physics?

30. What is heat? Describe the effects of heat upon the crust of the earth.

31. What relation has water to the earth? Name all the forms of water. How are the different forms of water produced?

32. What is meteorology? What relation has meteorology to geography? To geology? To mineralogy? What is the educational value of meteorology?

33. What relation has the distribution of sunshine to mathematical geography?

34. Give all the relations of the sciences of inorganic matter that you can think of.

35. Which branch can be profitably studied alone? Which branch can be profitably studied without studying all the others?

36. Explain: Geography and the other sciences of inorganic matter form the physical basis of life. What is the closest relation of inorganic matter and living organisms?

37. What is the general name of the energy which transforms inorganic matter to organic matter?

38. The study of living organisms consists in the study of the changes of dead matter to living. If immutable laws did not absolutely control all such changes, could there be any such thing as a study of life?

39. Upon what does every plant depend for its life and growth? What constituents enter into every plant?

40. What is the relation of plants to mineralogy, geology, geography, and meteorology? Can a knowledge of plant life be acquired without a knowledge of inorganic materials which nourish and support life?

41. What can you say of the dependence of animal life upon vegetation?

42. What relation has the evolution of plant life to geology? What is paleontology?

43. How does climate affect animals? What determines animal coverings?

44. What laws govern the distribution of plants over the earth's surface? Animals?

45. What are the relations of geography to zoölogy?

46. What facts can you give in regard to the adaptation of animals to their environment?

47. What is the zoölogy of man?

48. What is the difference between botany and zoölogy as studies? Between zoölogy and anthropology?

49. What are the relations of zoölogy to anthropology? Anthropology to botany? What sciences include them?

50. State all the facts that you can think of in the relations of environment to the evolution of man regarding mountains; grassy plains; deserts; forests; climate; rivers; seas; Greece; Egypt; Palestine; Great Britain; Scandinavia; India; China; United States; Africa.

51. What is the effect of assemblies of plants upon individual plants? Give the names of communities of animals. How is the individual animal modified by the mass?

52. Define ethnology. What is the difference between anthropology and ethnology? What are the principal means of studying ethnology?

53. What are the relations of geography to ethnology? Meteorology? Geology? Mineralogy? Botany? Zoölogy?

54. What are the geographical conditions for the tribal form of government?

55. Define history. What is the difference between history and ethnology?

56. What is the educative function of history?

57. What are the difficulties in the way of getting the truth from human records?

58. Geography is the science of the home of man. What are the effects of the earth's surface upon the development of the human race? Explain the polytheism and democracy of Greece. The monotheism and monarchy of Egypt. Why was Palestine adapted to the development of a nation powerful in education and religion?

59. Show that the same characteristic area of surface has entirely different effects upon the different stages of savagery, barbarism, and civilization. What was the Valley of the Mississippi to savages? What to a civilized people?

60. Contrast the effects of climate upon the civilizations of Scandinavia and India.

61. What relation has vegetation to history? Animal life? Illustrate,

62. What relation has the recollection of historical events to a knowledge of geography? Is there any necessity for mnemonics? Have you a clear concept of the countries whose history you study.

63. All known space is filled with matter: objects and bodies of matter are unthinkable without first conceiving their forms. What is form?

64. All our judgment of an object depends upon its corresponding concept in consciousness. Form is the fundamental mode of judgment. Discuss.

65. How was a knowledge of sound and color discovered?

Chapter III.—Form as a Mode of Judgment.

1. Define an object.

2. All space is filled with matter; all space is filled with objects; what is the difference between the two statements?

3. Is it true that an oral word, a wave of ether, or a vibration of electricity, is an object? Why? Why not?

4. Upon what mental product does all our judgment or knowledge of external objects depend?

5. Define an individual concept. Particular notion. Perception. What relation has an individual concept to an object that causes its appearance in consciousness?

6. Discuss: "Conscious activities are non-spacial."

7. The principal motive of all experiment, investigation, and study is to acquire a knowledge of energy which acts through matter. Is it true that an object acts upon consciousness? Does the mind act upon an object? Does an object act upon the mind?

8. Man knows less of matter than of energy; is this statement true? Why? Why not?

9. Define an adequate individual concept. What proof have you that your individual concepts are imperfect? Is it true that a child never has complex concepts, that is, has concepts that are always very simple?

10. What relation have individual concepts to knowledge of the external world?

11. How are individual concepts enhanced,—made to approximate adequacy? Is it true that no object remains identical with itself during any two successive moments of time? Give illustrations of changes in organic matter. All study is a study of change.

12. Discuss: "Matter does not change itself; there is no energy inherent in matter." What is materialism?

13. Discuss: "The qualities of an object through which energy acts determine the action of the energy, or the law of the energy." What influence has energy upon matter?

14. Discuss: "Qualities of matter differentiate energy." Can an object be changed in any way without changing its form?

15. Discuss: "Form is the supreme manifestation of energy." Upon what sense products do judgments of form depend? Can intrinsic knowledge of form be enhanced by any sense except that of touch? Is the greatest function of the sense of sight the representation of the products of the tactual sense?

16. Discuss: "The continued action of the sense of sight in observation cannot intrinsically enhance percepts of form."

17. Is it true that all the senses are in reality senses of touch? Explain.

18. Tell what you know about Laura Bridgman and Helen Keller.

19. Discuss: "Touch is the great intellectual sense."

20. Define an elementary idea. What is the relation of an elementary idea to an external attribute? What relation has an attribute to an object? What relation has an elementary idea to an individual concept?

21. Discuss the following statements:

(*a*) "Upon an elementary idea depends all knowledge of its corresponding external attribute."

(*b*) "Upon an individual concept depends all knowledge of its corresponding object."

(*c*) "All knowledge of the universe depends fundamentally upon individual concepts."

22. Define observation. What relation have the products of observation to the products of imagination? Explain the difference between observation and imagination. Is it possible to form distinct concepts by imagination unless distinct concepts have been previously formed by observation? Is it true that education depends fundamentally upon distinct or approximately adequate individual concepts? Why? Why not?

23. What relation has the study of form to the study of causation?

24. What is the function of geometry?

25. What relation has the study of geometry to geography, geology, and mineralogy?

26. Give illustrations of how geometry may be used in the study of mathematical geography.

27. Give illustrations of the opportunities to teach form and geometry in the study of geography.

28. Can you form clear pictures of surface forms?—for instance, of river basins or continents? Why? Why not? When you think of North America, do you think of a flat map, or of the real surface?

29. Give illustrations of the opportunities to study form and geometry in geology and mineralogy. Which should we study first, natural forms or typical forms? Why? When should the study of form be introduced into school? When, the study of geometry? What is the effect of the study of geometry upon mind development? Which study is of the greater importance—geometry or arithmetic? Why?

Chapter IV.—Number and its Relations to the Central Subjects.

1. What do you know of the history of methods in arithmetic?

2. Who was Warren Colburn, and what did he do for the teaching of arithmetic?

3. Give all the definitions of arithmetic that you can think of. Which is the best?

4. What is the practical use of arithmetic?

5. Is it true that no work has ever been or can be done without measuring? Name some step in progress that has been taken without the use of arithmetic? How does the carpenter, the cabinet-maker, the machinist, the blacksmith, or the shoemaker use arithmetic? Name some discovery, invention, step in progress, made without the use of arithmetic?

6. Discuss: "Number is the product of mind, and does not exist outside of mind."

7. Give all the uses of number in practical life that you can think of.

8. How does the child begin instinctively its preliminary studies in number?

9. What is the value of a true definition in number?

10. What is size? What relation has size to form? What definitions can you give of size and form? What is a knowledge of size without a knowledge of form?

11. What does a knowledge of size involve? How is a knowledge of size acquired? When and how does a child begin to learn size?

12. How is a knowledge of distance acquired? Of area? Of volume?

13. What have inexact judgments of length, breadth, and thickness to do with exact judgments?

14. Of what value is a knowledge of form without a knowledge of size?

15. Apply arithmetic to the study of geography.

16. What is the use of arithmetic in imagining distances and areas?

17. Make a large number of problems that are absolutely necessary for the imagination of areas.

(*a*) Measure all the continents by one continent.

(*b*) Give the differences in areas of continents.

(*c*) In what proportion is the area of Australia to the area of all the other continents?

(*d*) What proportion of coast-line is there to the area (square miles) in each continent?

(*e*) What relation has the civilization of a continent to its coast-line?

(*f*) Give the differences in lengths of the continents. Which is the longest? Which the shortest?

(*g*) Give the differences in breadths of the continents. Which is the broadest? Which the narrowest?

(*h*) What is the proportion of land to water?

(*i*) What is the proportion of plain to highland?

(*j*) Compare the areas of all the large river-basins with each other.

(*k*) Compare lengths of slopes.

(*l*) How many areas of the size of Australia are there in Eurasia?

(*m*) How many square miles of desert land are there in the world?

(*n*) How many square miles of grassy plain are there?

(*o*) What is the proportion of desert land to grassy plain? To forest land?

18. The relation of area to population: How many square miles are there in Siberia? What is the population of Siberia? Find the number of inhabitants to a square mile. What inferences can you make?

19. Measure political divisions, one with another.

(*a*) Which is the largest political division in the world? Which the smallest?

(*b*) How many square miles are there in the empire of Great Britain?

(*c*) How many square miles of the earth's surface are under a tribal form of government?

(*d*) How many square miles are under absolute monarchy?

(*e*) Limited monarchy?

(*f*) How many square miles republics? Which is the largest republic in the world, in square miles? Which the smallest?

(*g*) How many square miles are inhabited by Christians?

(*h*) How many by Mahommedans?

(*i*) How many square miles are inhabited by so-called Pagans?

(*j*) How many square miles inhabited by Indians?

(*k*) By black people?

(*l*) By Caucasians?

20. Make a number of examples measuring one political division by another, taking the United States and your own state for standards of measurement.

(*a*) Which is the largest state in the United States? Which the smallest?

(*b*) How many states the size of Illinois could be made out of the area of the United States?

(*c*) How many the size of Rhode island?

(*d*) Compare the areas of states by square miles with the number of population. Give reasons.

21. Make a large number of arithmetical problems in mathematical geography.

22. Is it true that learning the subject of geography really requires more arithmetical problems than can be found in any text-book on arithmetic?

23. Should the numbers and processes of numbers be learned first, or should they be learned in their application in the study of the subject of geography?

24. What are the uses of an exact knowledge of weight? How does a child begin to study weight? How is density measured? Is weight measuring force or matter? How is force measured? How does the child begin to measure force?

25. What arithmetical problems can be made in the study of science? Make a number of problems necessary for a knowledge of physics. Of botany. Of geology. How much arithmetic is necessary for the study of history? How does a child begin to study the limitations of time? What relation have limitations of time to history? To force? Are all the general directions of the study of arithmetic comprised in lines, areas, volume, bulk, force, time, and single things? Can all these subjects be acquired by practical application in the study of the central subjects? Or is it necessary to know number before practical applications? What is the educational value of the study of money equivalents? Is it educative and economical to teach children much of the detail of commerce?

26. Discuss: "In the acquisition of arithmetical knowledge the child may feel in every act of numbering that the act is an absolute necessity." What is the difference between the mental energy evolved in the child's learning number without application, and learning it with its direct application?

27. What relation has arithmetic to manual training?

28. Should the numbering judgment be exercised at every step in learning arithmetic?

29. How much drill is necessary in arithmetic? Is the following statement true: The more thoroughly the numbers are applied to the learning of central subjects, the less the drill necessary? Which is the most economical and effective drill—drill in the direct and useful application of numbers, or drill in pure numbers?

30. All the tables in arithmetic we learn by practical application. Please estimate, each of you, the time you spent in the study of arithmetic during your eight years' course in the primary and grammar schools. How many spent one third of your time in arithmetic? In your course in arithmetic what was the proportion of time given to drill and practical application of numbers?

31. Is it possible to use the numbering mode of judgment in the study of all the central subjects so effectively as not to take any appreciable time in the study of number as an isolated subject? Can language, including

spelling, penmanship, and grammar, be acquired under the impulses of intrinsic thought? Is the same true of arithmetic?

Chapter V.—What Can be Done with Numbers?

1. Is it possible for you to lay aside all preconceived notions of numbers and make a new study of the subject? Is it possible to completely illustrate with objects every fact in number? Why not?

2. In what sense are all numbers abstract? What is the difference between an applied and a pure number? Can you think of a number without thinking of a number of things? What is an abstract number?

3. Discuss carefully: "All that can be done with any number is to divide it." Illustrate.

4. Why is it not psychologically proper to say we *separate* numbers? Do we separate numbers in consciousness? What is the practical use of the word "group" in arithmetic?

5. Divide twelve objects into a number of equal numbers. How many equal numbers have you? Write the arithmetical sentence that expresses what you have done?

6. Study carefully statements made in regard to division. Are the arithmetical sentences given correct?

7. Is it right to say that $12 \div 3 = 4$ 3's? Is the quotient 4 any more abstract than the dividend or the divisor? Determined how a child would find the 3's in 12. What must he do? Illustrate. Divide twelve into three equal parts. Show how a child would perform this operation. Compare carefully the two operations, finding the 3's in 12, and finding $\frac{1}{3}$ of 12. What is your motive in finding the 3's in 12? Give a number of practical examples. What is your motive in finding $\frac{1}{3}$ of 12? Give a number of practical examples. Illustrate.

8. In division, what is the dividend? What the divisor? What the quotient? Illustrate.

9. In partition, what is the dividend? What the divisor? What the quotient? Illustrate. Are the two operations substantially different? How much of the study of arithmetic consists of problems in these two operations? Divide a number into two numbers: what must you know in order to divide a number into two numbers? What do you find? Illustrate.

10. Criticise carefully the statements in regard to division on p. 84.

11. Discuss: "All that can be done with a number of numbers is to unite them."

12. What is the difference between the operations of uniting equal numbers and uniting numbers that are unequal?

13. Criticise with great care the definitions of the five operations given on pp. 84, 85. Are these operations distinct, each from the other?

14. Discuss carefully the discussion of the definition of division. Show by objects any mistake made in the discussion.

15. Does 3 4's mean the same thing as 3 times 4? If 3 4's mean something different from 3 times 4, what is the difference? If 3 times 4 is identical in meaning with 3 4's, which sentence is the better?

16. Is the statement that there are 4 3's in 12 written this way, $12 \div 4 = 3$? If it is not written in this way, how is it written?

17. Illustrate with objects the ten arithmetical sentences on p. 86.

18. Can all arithmetical sentences be completely and exactly illustrated with objects? Illustrate with objects the ninth and tenth sentences. Illustrate with objects the difference between partition and division. If partition differs from division, should both operations be expressed by one form of sentence?

19. Discuss carefully the subject of partition. Illustrate every step with objects.

20. Is the operation expressed by $\frac{1}{3}$ of $12 = 4$ the same in kind as the one expressed by $\frac{1}{2}$ of $\frac{1}{3} = \frac{1}{6}$?

21. Discuss and illustrate all the definitions given.

22. If partition and division are identical operations, how would you teach the sentences, $\frac{1}{3}$ of $12 = 4$, and $12 \div 3 = 4$?

23. Is there any necessity for the use of one sentence which states two different arithmetical facts?

24. Did you ever try to teach division to little children? What was the result?

25. How is number learned by attention? What should a child observe in learning number?

26. Criticise the statement: All recitations of tables and the ordinary operations with figures in arithmetic are processes of recollection, and do not require in themselves immediate acts of judgment.

27. How is a knowledge of number developed in a child? Is there an absolutely pedagogical sequence in learning number?

28. Criticise the statement: Whenever and wherever operations in number will assist children in the study of central subjects, they should be used. For instance, if the child needs twenty or one hundred in the first primary grade, these numbers should be freely used.

29. Should the fundamental facts of numbers be sunk into the automatic?

30. Discuss the question: "How should automatic knowledge of numbers be acquired?"

31. Is it possible to gain a knowledge of numbers by the mere use of figures in mechanical operations?

32. Discuss: "The present arrangement of subjects in arithmetics in common use is pedagogically wrong."

(*a*) Which is the easier subject to teach—multiplication or addition? Why?

(*b*) Should multiplication be taught without teaching division and partition at the same time?

(*c*) Should addition be taught without subtraction?

(*d*) Should the five operations be taught by practical application?

(*e*) Should fractions, both common and decimal, be taught with the five operations?

(*f*) When should percentage and interest be taught? Why?

(*g*) When should denominate numbers be taught?

(*h*) When should the squares and cubes of numbers be taught?

(*i*) When should square and cube roots be taught?

(*j*) What is the difficulty in teaching fractions?

(*k*) What is the essential difference between teaching fractions and whole numbers?

33. By what directions should we be guided in the development of arithmetic?

34. Discuss: A very practical knowledge of arithmetic may be acquired in eight years by applying numbers at every step to the necessities of thought in the study of the central subjects. Number is an absolute necessity in all experiments, investigations, and study. Which is the more economical—to teach numbers first as preliminary to the study of practical subjects. or to teach numbers in direct relation to practical subjects?

Chapter VI.—Attention.

1. Define attention.
2. What are external attributes?
3. Is an external attribute energy or matter?
4. Are heat, light, sound, color, and electricity forms of matter or modes of motion?
5. What is the relation of an external energy or attribute to an elementary idea?
6. What is the relation of matter to energy?
7. How is an elementary idea created in the mind?
8. Explain: An elementary idea corresponds to the external attribute which created it.
9. Consider the hypothesis of evolution that nerve-tracts in the brain were created by the action of classes of external attributes.
10. What is meant by specialized functions of the brain? Can a person born blind have any ideas of color? Why not?
11. Discuss the statement: The sensorium determines the number, kind, and nature of external energies which may act upon and through it.
12. What may be said of any part of the brain or any nerve-tract which fails in its function?
13. Is it true that there are countless external attributes which have never acted upon the brain over nerve-tracts?
14. How many colors can you see? How many colors (shades and tints) are there?
15. Discuss the statement: The child is born deaf, dumb, and blind.
16. What are units of elementary ideas?
17. Upon what mental product do all analyses of external objects depend?
18. What is an individual concept?
19. In an act of attention, does the mind act upon an object? If it acted upon an object, it would change it, would it not? Does the object change the mind? Does the object act upon the mind? Does matter or energy act upon mind? Does consciousness consist of pure energy?
20. If the mind does not act upon an object what does it do?
21. Discuss the statement: All individual concepts are automatically and unconsciously synthetized.
22. Discuss the statement: An object acts upon consciousness instantaneously. Illustrate.
23. What is the psychology of hearing? Seeing? Touching? Tasting?
24. Are the acts of synthesis, association, recollection, remembrance, and

imagination identical ? Do they mean one and the same kind of act ? Why not ?

25. Discuss : In acts of consciousness elementary ideas rise above the plane of consciousness. When an individual concept sinks below the plane of consciousness is it dissipated into its elements or does it remain as a whole stored up in the mind ?

26. Discuss : In acts of attention, the function of the being consists wholly in the attitude of the body and mind.

27. Discuss : In acts of attention complete passiveness is the most economical activity.

28. What mistakes have arisen from the supposition that the ego can directly synthetize ideas ?

29. Discuss the recapitulation on p. 114.

30. What is an educative act ? What acts of consciousness are not educative ?

31. Discuss the difference between the spontaneous unconscious action of synthesis and the acts of the ego.

32. What is the difference between what man does for himself and what is done for him ?

33. Discuss : Self-activity or self-effort is the fundamental law of education.

34. Discuss the definition of attention on p. 116.

35. What is the meaning of intense conscious action? Try experiments like those given on p. 117.

36. Can there be any act of attention without intense conscious action ?

37. What is interest in attention ? What is will ? Which acts of consciousness are generally more intense—those in which there is an absorbing interest, or those which are wholly controlled by the will ?

38. What are the three modes of attention ?

39. Discuss : "Each and every state of consciousness from the first action of consciousness to the last, in every human being, contains in itself every kind of possible conscious action."

40. What is an act of inference ? What is the relation of inference to judgment ? Define recognition ; analysis ; comparison ; classification ; generalization.

41. Is it true that the acts of observation, hearing-language, and reading are identical in kind of mental action ?

42. Define observation. Can there be any act of observation without acts of judgment ?

43. What are the two classes of objects which act upon the mind ? What is the difference in action between a non-symbolic object and a symbolic object ?

44. What are appropriate activities ? What is the difference between appropriate activities and corresponding activities ?

45. What is the function of a symbol ? Is it true that a word has but one function ? What is a pure symbol ? What is a partial symbol ? Illustrate.

46. Illustrate the effect of words upon consciousness.

47. Are oral and written words objects ?

48. Discuss learning to hear language as a process of functioning words.

49. Define hearing-language. Define reading.

50. What is the difference between reading and a study of text ?

51. What is the educational function of the three modes of attention?
52. What is the use of an object in observation?
53. What is the use of a symbol in hearing-language and reading?
54. Discuss: The less the observation of symbols the greater the thought power will be.
55. Give the analysis of an act of attention.
56. What is motive? What precedes motive?
57. What is unity of action?
58. What is the physical attitude of attention?
59. Is it true that every organ of the body, every muscle, and every nerve assist in economical acts of attention?
60. How can you tell when a pupil is attentive?
61. What are the marks of attention?
62. Why should there be the least possible attention to forms of words in hearing-language and reading?
63. How is absorption of mental power in forms of words sedulously cultivated?
64. What is the effect upon brain and body of acts of attention? How long, approximately, can little children sustain acts of attention? What is the effect of a demand for attention if the pupil's brain is tired?
65. What should limit demands for attention?
66. State the danger of trying to exhaust one subject before a child is able to take all the steps in understanding it.
67. What is the effect of normal habits of attention upon the development of the body?
68. Discuss: The body is an instrument for acts of attention and expression.
69. Analyze unity of action.
70. What should govern teachers in presenting conditions for acts of attention?
71. How can you create disgust for learning in the minds of pupils?
72. What has pre-judgment to do with acts of attention?
73. Define teaching.
74. Define education.
75. Is it true that all educative subjects are in themselves intensely interesting?
76. Is it possible to ever study any subject aright without loving it? In other words, when one says he does not love a subject—geography, for instance—has he ever really studied it?
77. Discuss: Teaching is the presentation of right conditions for acts of attention.

Chapter VII.—Observation.

1. Define psychology.
2. Define pedagogics.
3. What relation has psychology to pedagogics?
4. What is observation?
5. Observe an object and give the result.
6. What is an object?
7. What is the correspondence to an object in the mind?
8. Define an individual concept.

9. What is an elementary idea?
10. Discuss the definitions given on p. 142.
11. What is the function of a symbol?
12. What is the difference between a pure and a partial symbol?
13. Of what knowledge is an elementary idea the basis?
14. Of what knowledge is an individual concept the basis?
15. Upon what does the analysis of an object depend?
16. Discuss: Our knowledge of the universe depends fundamentally upon the products of the senses.
17. What is a crude individual concept?
18. By what experiments may you test your own concepts?
19. Are many of your concepts very inadequate?
20. If your concepts are inadequate, what do you judge the child's concepts to be?
21. Define an adequate concept.
22. What is the difference between comparison and classification? What is the relation of comparison to classification?
23. What is spontaneous or instinctive classification?
24. Is it true that we can have no adequate concept of any object? Why? Why not?
25. Is it true that there are countless external attributes that do not act upon the brain? Why not?
26. Is it true that the products of the senses are the fundamental limitations of knowledge?
27. What relation have discoveries and inventions to close observation?
28. Is it true that false and imperfect generalizations have been the result of imperfect observations?
29. How were the natures of sound and color discovered?
30. You know something about the history of modern discoveries in all the sciences: by what means has geology been revolutionized and geography radically changed within ten years?
31. Is it true that all modern progress has its foundation in close and careful observation?
32. What relation has sense-perception to education?
33. The savage has abundant means for observation: discuss the question, Why is he not educated?
34. Is it true that the brain and sensorium determine the action of external attributes? Explain why a Bushman cannot see a picture.
35. What has motive to do with intellectual action?
36. Are acuteness and sharpness in observation the true basis of education?
37. What would be the difference between the observations of a Thoreau and of a savage in walking through a forest?
38. What is the function of a symbol?
39. What is the use of the printed page in education?
40. What is the relation of observation to reading and the study of books?
41. Can reading ever be made a substitute for observation?
42. Reading is the study of the thought of man; observation is the study of the thought of God. Discuss.
43. Discuss: The material universe is the manifestation of God to the human mind.

44. Is the study of nature in itself intrinsically moral? Why? Why not? Which study is in itself the more moral—science or history? Why?

45. Is it possible for a human being to love nature without loving God?

46. Discuss: Myth is the imperfect interpretation of the truth in nature.

47. Is myth an absolute necessity in human growth?

48. What enables man to interpret, understand, and criticise books?

49. Is all truth of God?

50. What is the difference between the truths of science and the statements of history?

51. Is there any such thing as true history?

52. What has prevented man from writing true history?

53. How should history be studied?

54. What is the basis of all judgment in regard to historical facts?

55. How does a child gain this basis of judgment?

56. When does a child begin practically to study civics?

57. History dogmatically taught cripples and dwarfs the mind. Is this statement true?

58. Is it true that one party can notstate the truth of another; nor followers of one creed state the truth of another creed, nor one nation give the truth regarding another nation?

59. Discuss: The products of one's own personal observation and experiences are the basis of judgment in the study of history.

60. What can you say of the text-books in science?

61. Was the Rector of the Scottish University right in his statement?

62. Tell something about progress in geography, geology, physics, and chemistry during the last few years.

63. Should a child be taught that any generalizations found in text-books upon science are absolutely true?

64. What is meant by "suspended judgment"?

65. Discuss: Real consistency is everlasting change.

66. Discuss: Education is the development of the attitude of the soul towards truth.

67. Is dogmatic teaching ever pedagogical?

68. What is the meaning of the sentence, "Except ye become as a little child"?

69. Is not observation the best means for cultivating a love of study of books and reading?

70. What are the relations of the products of observation to the understanding of printed books?

71. Why have high schools, colleges, and universities introduced, within a few years, much laboratory work?

72. Should a child study science throughout the entire eight years of the primary and grammar grades? Why? Why not?

73. What has the past brought the child?

74. Has progress in civilization made any new laws of mental growth or modified the law of self-effort?

75. How true is the statement that a child must go through the experiences of his race?

76. Discuss: All the past has brought us is a better knowledge of the human being and better conditions for self-effort.

77. Discuss : Education is the economizing of the energies of the human being.

78. How much should a child discover for himself and how much should he be told?

79. When should a child be told any fact or given a generalization?

80. What is the pedagogical value of experiment and investigation in laboratory work ?

81. What is imagination ?

82. Of what elements are all creations of imagination composed ?

83. What is the relation between observation and imagination ?

84. Can any one who observes imperfectly have a powerful imagination ? Why ? Why not ?

85. Discuss : The fundamental acts of consciousness in observation and imagination are precisely the same.

86. What is the educational value of imagination in (*a*) geography ; (*b*) history ; (*c*) science?

87. What can you say of the observing powers of Humboldt, Agassiz, Darwin and Huxley?

88. Is it true that the wonderful discoveries made by these men had their bases in their power of close observation ?

89. Which is the better key to knowledge, reading or observation ? Discuss.

90. Discuss : Ordinary thinking, or ordinary acts of consciousness, are not educative.

91. What is an educative act ?

92. Define reading.

93. Is it a scientifically correct statement that a person can have no other thought than his own ?

94. Criticise the prevailing method of studying geography and science by text-books.

95. What is the pedagogical value of committing to memory a definition in geography or natural science?

96. Can you give any reasons why children are made to study pages in geography when surface-forms of the earth can be so easily observed ?

97. What is the relation of observation to literature ?

98. What is literature ?

99. What relation has literature to history ? To science ?

100. If studies of nature were struck out of literature, what would we have left ?

101. What has the study of nature to do with the understanding and appreciation of literature?

102. Please make a summary of facts in regard to uses of close observation to the human race during the past fifty years.

103. Please state the pedagogical possibilities of observation in the study of (*a*) geography, (*b*) geology, (*c*) mineralogy, (*d*) botany, (*e*) zoology, (*f*) anthropology, (*g*) ethnology, (*h*) history.

104. What means has every teacher at hand to train a child's power of observation ? What are the opportunities for observation in the country ? In the village ? In the large city ? What are the means to train observation in the close streets of a large city, where there are few or no trees or shrubs?

105. Why is it that people generally are so much opposed to practical study of things that concern the essentials of life and living?

106. Please read the psalm on p. 171. What is the "great transgression?" How is "presumption of knowledge" sedulously cultivated? What is the psychological effect of presumption? Discuss: "Blessed are the poor in spirit, for theirs is the Kingdom of Heaven."

107. Give a summary of all the uses of observation and its value in education.

Chapter VIII.—Language and Hearing-language.

1. What do you know of the history of the methods of teaching language?
2. Who were the humanists?
3. Who were the philanthropins?
4. Discuss: There can be no thought without language.
5. How does the mind change the body?
6. What is meant by bearing and attitude of the body?
7. What influence have acts of attention upon the whole body?
8. Discuss: The mind is continually creating the body.
9. Was language invented by man? Give reasons.
10. What are the relations of a language to the people who created it?
11. What is a dialect?
12. What relation has philology to the study of ethnology?
13. How are new words created?
14. What are the essential differences between the development of the English language and the development of the German language?
15. Discuss: The language of a people indicates better than any other means the exact stage of the growth and civilization of that people.
16. Of what use is the study of Sanskrit?
17. What argument can be made for the study of the dead languages?
18. Is it true that the ethnology and history of a people may be best understood by a study of its language?
19. What relation has the literature of a people to its history?
20. What relation has a foreign language to a study of English?
21. How does a child learn language?
22. Have you ever observed children who were learning to hear language and to speak?
23. What relation has hearing-language to speaking?
24. Give an account of the difficulties which a child must overcome in learning to hear language.
25. What is an idiom?
26. Is it true that idioms are more difficult to learn in a language than words?
27. What is the function of a word?
28. What is voice?
29. What relation has voice-to speech?
30. How is each and every voice-element made?
31. What is enunciation? Pronunciation? Rhythm in language? Inflection?
32. Discuss: Voice, rhythm, harmony, melody and emphasis are spontaneous—they assist in articulation and pronunciation.

33. When is a word functioned?

34. Discuss : Learning to hear language is learning to function words and idioms.

35. What are appropriate activities? What is the difference between corresponding activities and appropriate activities?

36. Give the general law by which all symbols are learned.

37. Give the special law under which a word is functioned.

38. Explain how a word acts in arousing appropriate activities.

39. How may a word act without arousing appropriate activities?

40. Is it true that the law given on p. 181 is the only law by which words can be learned?

41. What rule governs the number of repetitions of acts of association in learning a word?

42. What do you understand by intensity of acts of association?

43. State the rule given on p. 181 of intensity of acts of association.

44. Upon what does intensity of acts of association depend?

45. What is interest?

46. Is it true that there is no interest in the effect of a word itself?

47. Is it true that each sound and each word made is made by itself and must be heard by itself? And is it also true that the synthesis of these sounds is perfectly automatic?

48. Is it true that no child, nor even grown person without training, ever attempts to analyze an oral word.

49. What is meant by the word acting instantaneously?

50. Test the illustrations given on p. 182.

51. How are idioms learned?

52. When does a child begin to hear language?

53. What is the parent's method of teaching language?

54. Supposing a mother should attempt to teach the elementary sounds first, and then unite them into words—what would happen?

55. By what energy does a child overcome all the difficulties of hearing-language?

56. How long does it take a child to understand the oral language?

57. What is the universal rule with parents in attempting to teach children the oral language?

58. Do little children learn short words before they do long ones?

59. What is a natural method?

60. Is it true that there is in reality only one true method?

61. What has imitation to do with learning language?

62. Is it true that a child learns all forms of speech by imitation?

63. What has a child acquired of language when he enters school?

64. Is it possible to continue the home method of teaching oral language, or can a better method be introduced?

65. Should the language taught a child always be adapted to the thought?

66. Is it right to teach a child a word he does not need for immediate use?

67. Is it possible to make thought development the centre and adapt the teaching of language at every step in thought?

68. How much practical grammar has a child learned when he enters school?

69. How should teaching of grammar be continued?

70. What reforms are necessary in the teaching of language?

71. Have you ever known children to be taught to speak and write the English language under the immediate impulses of intrinsic thought?

72. Do you believe that the home method may be continued in school both in teaching speech and writing, and that all forms of speech, including spelling, etymology, and syntax, may be taught under the impulses of intrinsic thought? Why? Why not?

73. Can you give a good reason why children are taught by purely formal methods?

74. What improvements in teaching language can you suggest?

Chapter IX.—Reading and its Relations to the Central Subjects.

1. Define reading; hearing-language; observation.

2. What is the difference between reading and oral reading? Which is of the greater importance? What is the difference between reading, hearing-language, and observation? Is it not just as logical to discuss hearing-language and speech, and observation and speech, under one head as to discuss reading and oral language?

3. What are the relations between the three modes of attention? In what does the difference between the three modes of attention consist? Is it true that reading in itself has no educative value? Upon what does the educative value of reading depend?

4. What is the difference between reading and the study of books?

5. Has reading any educational value?

6. What is the relative value of reading?

7. How can reading be made a means of education?

8. Is it true that every human being can have no thought but his own? Is it scientific to say that reading is getting the thought of an author?

9. Upon what do the conscious activities aroused by reading depend?

10. Is it true that reading is thinking and nothing else?

11. When is reading educative?

12. What is meant by hemming in and intensifying thought?

13. What is the function of a printed word?

14. What are appropriate activities? What are corresponding activities?

15. Is it true that a word is an object?

16. Is the immediate action of the printed word precisely like the action of any other object?

17. Explain: The mental correspondence of a word has no value in itself.

18. When is a word functioned?

19. What words by themselves recall definite activities?

20. What words assist other words in recalling definite activities?

21. What are the functions of conjunctions, prepositions, adjectives, adverbs and verbs?

22. What is the function of a sentence? Does a sentence always arouse complete thought?

23. Please try experiments upon yourself in writing words. Have some one write words upon the blackboard; shut your eyes until they are written;

open them and try to catch the immediate effect of the words. Write sentences in the same way. Write words in a foreign language.

24. What is the difference between the action of a word you understand, and one you don't understand ?

25. What is the difference between the function of a word and the function of a sentence ?

26. Discuss : Teaching reading is the presentation of conditions for the functioning of words.

27. State the law for the functioning of printed words. Is this the only law by which words are functioned ?

28. In what action of the mind do the appropriate activities come first ? In what does the effect of the word come first ?

29. Why cannot a word be functioned by one act of association ?

30. When can a word be functioned by one act of association ?

31. Discuss : Whatever directly assists in acts of association may be used in teaching reading ; whatever does not assist should be omitted.

32. Should children ever be taught anything in which they are not deeply interested ? Is it necessary to teach children anything in which they are not interested ?

33. Is the word in itself any source of interest to a child ? Is it generally repulsive ?

34. Do the right appropriate activities arouse emotions of pleasure ?

35. Can a child learn to read by the same method that he learns to hear language ?

36. State what you know about the history of teaching reading.

37. What did the philanthropins try to do ?

38. What is the phonic method ? What is the phonetic method ? What is the word-building method ? Which is preferable ? Why ?

39. Give the psychology of the A, B, C method.

40. Give some psychological reason why a child should learn the names of the letters before he learns the word. Do the names of letters assist in pronunciation ? How ? Illustrate.

41. Name all the methods that have had to do with the *forms* of words learned.

42. What do you know of Comenius ?

43. How did he try to teach boys Latin ?

44. How did he arouse the energy which overcomes the difficulties of the printed word ?

45. How have pictures been used in teaching reading ?

46. What do pictures arouse in the mind ?

47. What do you know of the German Normal Wörter Methode ?

48. Which will arouse the most intense mental action, generally, a picture or an object ?

49. What do you know of the American reformers in teaching reading—J. Russell Webb, Dr. Gallaudet, and Geo. F. Farnham ?

50. What are the conditions for an intense act of association ?

51. What causes the intensity in an act of association ?

52. Is it true that an oral word is far more complex than a written word ? Analyze both and decide.

53. In learning a foreign language, did you ever try to learn a sound altogether new to you ? What were the difficulties ?

54. Which is the more difficult to learn, to read a foreign language or to speak it?

55. What powers does a child have when he begins to learn reading?

56. Is it true that what a child loves best is best for him?

57. Is it pedagogical to begin the study of the sciences, myth, and history in the primary school?

58. Can these subjects be made an inexhaustible source of interest to the child?

59. Is it possible to teach reading under the mental energy induced by the study of these subjects? Why? Why not?

60. Discuss: That which is best in education, that which is best for the body, mind, and soul is unconsciously acquired.

61. What is the prevailing standard of education among parents?

62. Why do parents adhere so tenaciously to the A, B, C method?

63. What is the difference between appropriate activities aroused by objects and appropriate activities aroused by a study of science?

64. When should a word be given a child on the blackboard?

65. Why is the use of the blackboard the best way to teach children to read?

66. Why is it best to begin with script before printing is used?

67. Give all the reasons you know for the use of the blackboard and for the use of script.

68. What is the theory of concentration in teaching reading?

69. Discuss: Under the theory of concentration it takes no appreciable time to teach reading.

70. Can reading be made a continual means of enhancing thought?

71. If the theory of concentration in teaching reading is true, what saving of time can there be made?

72. State some of the opportunities and means pupils may have for the study of science and history in the primary school.

73. What is the relation of imitation to the teaching of reading?

74. How may writing be taught as the best possible means of teaching reading?

75. Is it possible for a child to write a word the moment it is presented to him upon the blackboard, with the supposition that he is very much interested in the word itself? Have you ever tried it?

76. How are children obstructed in their mental and physical action by fear?

77. Is it true that writing is a far better means of teaching reading than oral reading itself?

78. When should a child be trained to write sentences on the blackboard?

79. When a child writes a sentence correctly, what has he learned?

80. Can all spelling, punctuation, capitalization, be taught under the immediate impulses of intrinsic thought?

81. Why should a child never copy—that is, why should not the word remain on the board longer than to allow the child to merely glance at it?

82. What is the function of oral reading?

83. What is the use of the oral word in teaching reading?

84. Is it possible for an oral word to arouse the appropriate activities with sufficient intensity?

85. Is it economy to use the oral word learned in arousing appropriate activities ?

86. What is teaching ?

87. Give the definition of teaching on p. 210.

88. What effect has it upon the child's mind to write a word under the impulse of thought ?

89. The A, B, C method is unscientific and wrong ; there is not a single argument in its favor. Discuss.

90. Criticise the phonic method.

91. Explain Dr. Leigh's phonetic method.

92. What are the uses of the phonic and phonetic methods ?

93. Of what advantage would it be if the English language were phonetic ?

94. Why should not a child read orally just as freely and spontaneously as he speaks ?

95. Is the word-method a Chinese method ?

96. What is the law of analogy ?

97. Is it possible for a child to learn words without unconsciously associating the forms of the words and the forms of the letters with sounds ?

98. Can you give any good reason why, for ages, teachers have been through a barren wilderness of methods and devices for teaching dead forms ?

99. What is the pedagogical use of phonics ?

100. How can children be trained to pronounce words slowly ?

101. Of what help will slow pronunciation of words be to children in learning to read ? Of what help in articulation ?

102. Can a child be so trained by the phonic and phonetic methods as to pronounce words without having the thought they should recall ?

103. Is it pedagogical to use reading as a means of enhancing the thought acquired by the study of the central subjects from the first to the last steps ?

104. When should literature be read and studied ?

105. What should be the reading in geography ; in science ; in history ?

106. What other reading should be used ?

107. What is literature ?

108. Should children read lessons when they cannot pronounce all the words orally ?

109. How can reading be made a potent means of developing mental power ?

Chapter X.—Modes of Expression.

1. Discuss the first sentence of the chapter.

2. Is it true that normal acts of expression develop the nervous system ?

3. What relation have attention and expression ?

4. Define expression.

5. What are the modes of expression ?

6. Are these modes of expression distinct from each other ? How are they made distinct ?

7. Is it true that all works of man's hands are the products of expression ?

8. Is language the greatest outcome of thought and expression?
9. Discuss: The language of a people is its ethnographic body, created by its composite soul.
10. By what means do we trace the several stages of evolution from savagery to barbarism, and from barbarism to civilization?
11. What is ethnology? How is it studied?
12. Discuss: All education is by self-effort.
13. What is the greatest product of expression?
14. State carefully and discuss the questions on p. 226.
15. Has each mode a particular function in the development of the race?
16. Discuss: "Necessity is the mother of invention."
17. What is motive, and what has it to do with human action?
18. Discuss: The higher the motive, the higher the human action. Motive determines method and controls result. Is all education the development of motive?
19. What is the will? What has the will to do with motive?
20. Is every act of the ego an act of the will?
21. What is said of unexecuted motive? Is it true?
22. How do acts of expression develop the body?
23. What is an agent of expression?
24. What is skill? What is adequate skill?
25. Discuss the statements in italics on p. 228.
26. What is gesture?
27. Discuss: Gesture is the primitive and elemental mode of expression.
28. What was gesture to the savage?
29. What is gesture to the highly developed being?
30. Discuss: Gesture was probably the primitive mode of expression, out of which were developed all the other modes of expression, with the exception of voice, speech, and vocal music.
31. What relation has gesture to drawing, modeling, and painting
32. What is meant by the conceptive modes of expression?
33. What relation has gesture to articulate voice?
34. What is a descriptive gesture?
35. What is the relation of gesture to emphasis?
36. What relation has gesture to music?
37. Is dancing an essential to education?
38. What are the essentials of grace?
39. What is grace indicative of?
40. What is voice?
41. What are the organs of voice?
42. What other modes of expression were evolved out of voice?
43. What is the relation of a primitive gesture to inarticulate voice?
44. Present theories of how articulate sounds were first developed.
45. What is onomatopœia?
46. What is the ryhthm of inarticulate voice? The rhythm of speech?
47. How is the rhythm of speech marked?
48. What is the relation of rhythm of speech to vocal music? What is the function of vocal music? What is the educational value of vocal music?
49. What is the reflex action of gesture upon the mind? Of voice? Of speech? Of music?
50. What is music to the savage?

51. What is the relation of music to the cultivation of religious emotions? To barbarism? To poetry?
52. What is the influence of vocal music upon speech?
53. What can vocal music express where language fails?
54. Discuss: That which is best for the soul is ever and ever the best for the body.
55. What is the relation of vocal music to the development of the body?
56. Explain. Every act of expression requires the action of the whole body.
57. What is emotion? What relation has emotion to human growth?
58. How may every mode of expression degrade the being?
59. What is making, or manual training?
60. What are its products in human history?
61. What is copying? What is original construction? What are the differences in mind action between ambition and original construction?
62. What motive governs making?
63. Suggest theories of how the human race began to construct and build.
64. What has been the intellectual value of making to the evolution of the race?
65. Discuss the analysis of making on p. 236.
66. What is the relation of making to physical training?
67. Discuss: Making is Nature's primary method of human growth.
68. What are the conceptive modes of expression? Why are they called conceptive? What is an individual concept?
69. What is the difference between the motive of making and the motives of modeling, painting, and drawing?
70. What is the main thing to be expressed in art modes of expression? What relation has the thought expressed to the individual concept through which it is expressed?
71. What theory can you suggest concerning the origin of art?
72. Did art have its beginning in religious instinct?
73. What have been the purposes of art in history?
74. Discuss: Art is the manifestation of the invisible.
75. What relation has writing to drawing?
76. What are hieroglyphics?
77. Discuss: The art in a work of art can never be copied.
78. Discuss: Mere imitation of art has no relation to art itself, and no educative influence.
79. Discuss the motive of art.
80. Did you ever hear of a great artist who began his apprenticeship by copying works of art?
81. What is the greatest function of art?
82. What is the reactive influence of art expression upon the mind?
83. How does art develop motive?
84. Copying merely externalizes an individual concept; the individual concept is the means of embodying the thought in art. Discuss.
85. What is a partial symbol?
86. How is thought expressed by modeling?
87. What is form?
88. By what sense is knowledge of form acquired?
89. What is the educational value of modeling?

90. What sense does it cultivate?
91. Discuss: The less the quantity of material used in realizing thought the greater must be the concentration of thought.
92. Would art have any function if it did not reveal more than the common eye can see in the objects painted or drawn?
93. Is there a true order of evolution of the conceptive modes of expression?
94. Is making the fundamental mode, and should it be followed by modeling, then painting, and then drawing?
95. Should painting precede drawing in education?
96. What is meant by "color is the great representative sense"?
97. What relation has making to modeling? Modeling to painting? Painting to drawing? Which is more difficult? Why?
98. What is the physical training gained in all art expression?
99. What is progress in skill?
100. How should all art works be criticised?
101. What is adequate skill?
102. Can a child have adequate skill?
103. What is the relation of grace to art expression?
104. Discuss the question: Is each and every mode of expression an indispensable factor in the harmonious growth of body, mind, and soul?
105. What is speech?
106. Analyze speech.
107. What are the spontaneous qualities of the voice?
108. Is it true that the mechanical obstacles in speech are more difficult than in any other mode of expression?
109. Discuss: The mechanism of speech is wholly a product of imitation.
110. In acquisition, what advantage has speech over all other modes of expression?
111. Is it true that the speech of a child always conforms to his thought power?
112. Is it true that no word or sentence is ever learned solely for future use?
113. Should words ever be learned for future use?
114. What is the motive of speech?
115. What is the relation of spontaneous qualities of voice to speech?
116. What is writing? How was it first developed?
117. Analyze the forms of writing.
118. Discuss: The mechanical forms of writing are far less complex than the mechanical forms of speech.
119. What is the main difficulty in writing?
120. Which has the stronger motive generally, speech or writing?
121. Compare the educational values of speech and writing.
122. Discuss: Expression is ethical action.
123. What is the intellectual function of all modes of expression?
124. What is the spiritual function of all modes of expression?
125. Define each mode of expression. Compare each mode with each and all the others.
126. What relations have the modes of expression to each other?
127. Can a human being be fully developed without the exercise of each and every mode of expression?

128. In education can the exercise of one mode be intermitted without damage to the development of the being?

129. Are all the modes of expression absolutely necessary for development?

130. Discuss: The exercise of all the modes of expression develops the body in the best possible way.

131. Discuss: Should handwork be made an organic factor in all education, from the kindergarten to the university, inclusive?

132. Can a human being be thoroughly educated without practice of that mode of expression called making?

133. Is it true that the strongest intellectual men of America—statesmen, lawyers, and ministers—got the foundation of their education in the shop and on the farm?

134. What is the history of aristocratic families who did not train their children to hand-work?

135. Is it true that laziness is an acquirement?

136. Discuss: There never was a lazy child born upon earth.

137. Discuss: The end and aim of education consist in teaching the child to work, to love work, and put his brain into work.

138. Discuss: Education is self-effort in the direction of educative growth.

139. Discuss the subject of manual training in primary and grammar schools. Is it absolutely necessary?

140. What shall be done with the children in large cities who have no opportunities for hand-work?

141. What is the narrowing effect of making one article continually?

142. What is the moral tendency of manual training?

143. Is there time for manual training in our schools?

144. Should there be a manual training shop attached to every school?

145. Would children study better and get their lessons better if they had manual training at least one hour every day? Why? Why not?

146. What are the educational values of reading, penmanship, and arithmetic?

147. Discuss: Reading, writing, and arithmetic, have in themselves no educational values.

148. Discuss: Education is not so much a matter of time as of quality.

149. What arithmetic is there in manual training? What study of form?

150. Discuss: Manual training is primary logic.

151. What is the practical use of art in the modes of expression?

152. What do carpenters, architects, shoemakers, dressmakers, gardeners, need of form and color?

153. What can you say of mistaken vocation?

154. Is it possible to give pupils the education that will lead them to find the vocation for which they are adapted?

155. What has the exercise of all the modes of expression by the pupils to do with the teacher?

156. Discuss: The teacher is able, through the exercise of each and every mode of expression, to watch and judge of the character of the pupil.

157. Discuss: Motive is cultivated by righteous action.

158. Give a *résumé* of the influence of the modes of expression upon the human being.

(1) Moral effect.
(2) Intellectual development.
(3) Physical training.

Chapter XI.—Unity of Expressive Acts.

1. Discuss the first paragraph :
(*a*) Define freedom.
(*b*) What is liberty ?
(*c*) What relation has liberty to freedom ?
2. Discuss : "Education is the economy of self-effort."
3. What is unity of action in attention ?
4. Define unity of action in expression.
5. Define teaching and training.
(*a*) Can there be teaching without training ?
(*b*) Can there be training without teaching ?
6. What is skill in expression ?
7. What is the perfection of skill ?
8. What are the elements of grace ? Define ease, equilibrium, and precision.
9. Give illustrations of ease and equilibrium.
10. Ease and equilibrium should precede precision. Discuss. Illustrate attempts to teach precision first.
11. What is the law of the diffusion of physical strength ?
12. What is the effect of training the extremities first ?
13. Discuss : Too early training in precision isolates the agents of expression.
14. Define genuineness in acts of expression.
15. How is unity of action illustrated by the movements of children ?
16. Ease and equilibrium are characteristic of great orators, actors, and singers. Discuss.
17. Illustrate broken unity of action.
18. What is the effect of imitating copies in writing ? Can writing be taught and unity of action preserved ?
19. What do you understand by broken unity of action ? Give examples.
20. Does a child ever make a mistake in emphasis ?
21. What is the mental effect of mere verbal memorizing ?
22. Discuss the list of means to break unity of action, p. 270.
23. Discuss the psychological explanation of broken unity.
24. Discuss self-consciousness. What is the difference between self-consciousness and confidence in self ? Are you self-conscious ? Illustrate.
25. What is pedantry ? Affectation ? Awkwardness ? What is the physical effect of pedantry ?
26. How is self-consciousness induced ?
27. Give personal illustrations of fear to express thought. Discuss false modesty and pride.
28. Is it true that teaching very often has its most marked outcome in fear ?
29. Define self-conceit. Which is the worse product—fear or self-conceit ? Why ?

30. Is it true that fancied dulness and stupidity in children are caused by a natural and instinctive distaste for unnatural and uneducative study?

31. Read the story of Sissy Jupe and the boy Bitzer in "Hard Times."

32. How much of such work have you experienced in school?

33. What is the "Great Transgression"?

34. Discuss: Prizes, rewards, and per-cents in school are worse than corporal punishment.

35. What is the educational value of flat-copy drawing?

36. Discuss "overburdening" in school.

37. Is it true that genuine educative work is the healthiest kind of exercise for both mind and body?

38. Discuss: The prolific cause of overburdening is not genuine work, but mental drudgery.

39. Discuss motive in relation to rewards, prizes, and per-cents.

40. Discuss: Self-consciousness is an incipient disease.

41. What is cant and affectation?

42. Is it possible by the exercise of the highest art in teaching to preserve unity of action in attention and expression? Why? Why not?

43. What is the first hypothesis given on p. 279? Is this a fair statement of the motive of very much work done in school?

44. Try to recall the motive under which you worked in school.

45. Did you love your studies for the truth you found, or were you controlled by the desire for rewards, prizes, and approbation, or fear of punishment?

46. What is the second hypothesis on p. 280?

47. Is economical education possible under the second hypothesis?

48. How can habits of self-consciousness be overcome?

49. Discuss: Unity of action in attention and expression is the highest outcome of human growth.

50. What is meant by a personal ideal? What is your ideal? What influence has your ideal over your work?

51. How much energy have you wasted in your education?

52. How may self-confidence be destroyed?

53. Much so-called education consists in making children afraid to try. Discuss.

54. When is it ever necessary to learn dead forms?

55. Discuss: "We don't want any thinking here! Tell me what the book says." Have you had any like experiences in your education?

56. Discuss: The only way habits of self-consciousness may be overcome is by the cultivation of an overpowering altruistic motive.

57. Discuss: The pupil imitates the teacher in everything he does—his manner, skill, and modes of thinking. Proficiency in any form of expression lessens the work of the teacher at least one half. Or, to put it another way,—the teacher who is not skilful in any mode of expression that he teaches has to waste a vast amount of energy in order to teach it well?

58. Discuss: Knowledge cannot be *imparted*.

59. What is the responsibility of a teacher?

60. What should be the attitude of a teacher toward his work?

61. What motive should be cultivated in all modes of expression?

62. Discuss: Motive determines and controls means and methods.

63. Discuss: The unity of action can only be maintained in education under the influence of the strongest altruistic motive.

Chapter XII.—Acquisition of Modes of Expression.

1. What are the two hypotheses in education?
2. Is the first hypothesis a fair statement of the motive in formal work?
3. Illustrate the application of the first hypothesis. Give illustrations not given in this book.
4. Is it true that mechanical work upon means of thought manifestation takes more than two thirds of the time spent by pupils in primary and grammar grades?
5. Discuss: Present good is everlasting good.
6. Discuss each one of the propositions under the second hypothesis.
7. Is the first proposition true? If true, how can it be applied?
8. Discuss: All acts of expression should be ethical. How can they be made ethical?
9. Discuss: Educative expression intensifies intrinsic thought, cultivates physical power, trains the will, and enhances motive.
10. Discuss: Personal energy, intensified by interest and a desire to manifest thought, when scientifically directed, is sufficient to overcome all the technical difficulties of form.
11. Explain and discuss *a*, *b*, *c*, *d*, *e* under the fourth proposition.
12. If the first proposition be true, what time would it save?
13. Discuss: Education is the realization of possibilities.
14. What possibilities in your education have you left unrealized?
15. How much more could you have learned if you had had the right conditions for the highest action of the whole being?
16. How is speech acquired?
17. What is the incentive to practise speech with the child?
18. Define making.
19. What should always be the motive in manual training?
20. What is the motive in sloyd?
21. State the three questions given on pp. 293–4.
22. Discuss carefully the answer to the first question.
23. Is the answer given sufficient?
24. Are there sufficient opportunities to exercise skill in the central subjects of study?
25. What is the function of each and every mode of expression?
26. Can you draw? Why not?
27. Shall the child be allowed to draw anything and everything of which he has a concept?
28. What is the efficient correspondence to a concept? The adequate correspondence to an object?
29. The correspondence of the drawing to the concept should be the basis of all criticism. Discuss.
30. What is genuineness in art?
31. Can you detect genuineness? Discuss: A teacher should demand that every effort of the child in the expression of thought should be thoroughly genuine.
32. Discuss: Crudeness in the expression of children has the distinctive mark of genuineness, while the demand for exactness and accuracy in drawing and painting is a demand for dishonest expression.

33. How many opportunities for drawing is there in teaching geography, geology, the study of minerals? What drawing can be introduced into the study of physics and chemistry? In manual training? In botany? In zoölogy? History?

34. Discuss: Everything in education should be judged by its tendency. Also discuss: The courage to be crude is the only path to success.

35. What relation have modeling and painting to drawing? Why should we begin with modeling?

36. What relation have geographical drawings to the teaching of history?

37. Compare the opportunities to draw in the study of science with the opportunities to draw from flat copies and models.

38. Why should every teacher be skilful in art? Why are teachers not skilful in art? Have you had time enough, if you had spent it profitably, to have acquired skill in art?

39. Why is it far more difficult for an adult to learn to draw than for a child?

40. Discuss: A child has no complex concepts. The more complex a concept is, the more difficult it is to express it by drawing, if practice in drawing has not kept pace with the growth of the concepts.

41. What great advantage has speech in mechanical execution? Is it possible to make modeling, drawing, and painting nearly as common modes of expression as speech?

42. Discuss the question given on p. 299.

43. Discuss: The most pernicious mistake in education is the logical arrangement of subjects, classed without regard to the power of the child.

44. Give some account of this so-called logical arrangement in teaching reading.

45. What is the great fault of the logical arrangement?

46. In overcoming a difficulty in form, what is the difference between the mere mechanical execution, and the execution under the impulse of interesting thought?

47. Have you had any experience in this direction?

48. Discuss: The pedagogical arrangement of difficulties in the expression of thought should always conform to the thought itself. In other words, there is no danger in allowing a child to express everything and anything in the line of education that he thinks.

49. Illustrate the crudeness of concepts by your own concepts. Have you a distinct concept of any object on earth? If you have, describe or draw it.

50. Why is a child pleased with his work in art?

51. Discuss: A felt inadequacy is the only guide to criticism.

52. Why does an accurate drawing conform in no wise to a child's thought?

53. Discuss flat-copy drawing. What has it done for you? What does it do for the child?

54. Flat-copy drawing is the most effective means to obstruct observation that can possibly be used. Give the illustration of drawing leaves from flat copies. Why did not the children draw from leaves?

55. What should always be the guide to expression and self criticism?

56. Is it right to allow a child to draw anything he pleases,—hills, valleys, bushes, trees, houses, etc.?

57. How can a teacher break the unity of action?
58. How can self-confidence be destroyed?
59. Discuss: "Except ye become as a little child." What is the psychological meaning of this sentence?
60. Can all children, if properly instructed, become efficient in all modes of expression?
61. Discuss: Education is the generation of power.
62. What is the theory of the typical method of drawing?
63. Discuss: The normal movement of the mind is from particulars to generals, from crudeness and obscurity to clearness, distinctness, and adequacy?
64. Discuss: Modeling, painting, or drawing typical forms is making, pure and simple.
65. How may art feeling be developed? How may it be crushed and killed?
66. What should be the end and aim of all art teaching?
67. Discuss "Art for art's sake."
68. What is the theory of concentration in teaching art?
69. What is the educative value of drawing for preparation for artistic work?
70. Review the discussion and point out the mistakes.

Chapter XIII.—Speech and Writing.

1. Explain: Demands for expression should be demands for educative thought.
2. What are the educational values of gesture and vocal music?
3. What is the mechanics of speech? What is pronunciation? What is an idiom?
4. What are the instinctive attributes of voice? Why are they called instinctive?
5. What has imitation to do with the acquisition of language?
6. Define hearing-language. How is hearing-language acquired?
7. Give your experiences in observing children when they are learning to talk.
8. Is it true that the mechanical difficulties in learning to talk are greater than in learning any other mode of expression? Why? Why not?
9. Is it possible to teach children to write by the same method by which they learn to speak?
10. What impulses does a child have in learning to speak?
11. What are the spontaneous factors of the voice?
12. Can melody, emphasis, and harmony be taught by imitation? Why? Why not?
13. How does a child learn to pronounce words?
14. Explain: In learning to speak, the language of a child conforms to the thought.
15. Discuss: A child never makes any mistake in emphasis.
16. In learning to speak, the child preserves unity of action; can this unity of action be preserved in other modes of expression?
17. Discuss: All improved methods of teaching that have ever been discovered sprang from a knowledge of the spontaneous activities of the child.

18. Is it true that right methods in school are simply the continuation of Nature's methods?

19. When should a child begin to learn to write?

20. Compare the mechanics of speech with the mechanics of writing.

21. Which is the better instrument of expression—the vocal organs or the hand-and-arm?

22. Is it true that the mechanical difficulties of writing are very much less than those of speech?

23. Compare thought action in speech with thought action in writing. What advantages has speech over writing, so far as the thought is concerned?

24. Discuss: Unity of action requires the minimum expenditure of physical energy for intelligible or legible expression.

25. Discuss: The smooth line is an infallible indication of ease in writing.

26. Please take the positions explained on pp. 315, 316, and make a test of the statement that by drawing the arm down the angle made will be between 51° and 52°. In making these experiments be careful that the eight requirements are exactly followed.

27. Which is the easier movement—the arm movement or the finger movement?

28. Give your experiences in observing children learning to write.

29. Is the finger movement unnatural?

30. Make vertical lines with the fingers and then make slanting lines: which is the easier movement?

31. Is deformity of the hand and body proof positive that positions in writing are wrong?

32. Is the slanting line made with the least possible expenditure of physical energy?

33. Can you test the arm movement if you have been accustomed to write with the finger movement?

34. Give the law of the distribution of energy.

35. Why is slate-writing wrong?

36. What is writer's cramp, and what is its cause?

37. What is the principal argument in favor of vertical writing?

38. How can vertical lines be made by the arm movement?

39. What is the first hypothesis in regard to writing?

40. How is this hypothesis applied in learning to write?

41. Give the second hypothesis. Is this hypothesis sound theoretically? Why? Why not?

42. Is it possible to acquire adequate skill in writing, under the impulses of intrinsic thought? Why? Why not?

43. If it is possible to acquire skill in writing in this way, what time would be saved? What power gained?

44. What is the relation of writing to the other modes of expression?

45. If the first steps in reading are given and the children are interested in thought, can they write the word as they see it written by the teacher? Did you ever try it?

46. Discuss: Children should not be allowed to copy words, or to look at the word while they are writing it.

47. How soon can children be led to write original sentences?

48. What is involved in the correct writing of original sentences?

49. How can the first steps in reading be taught? Is it true that if children read a lesson they have themselves written, and that lesson afterwards be printed, that they will read the print as well as they did the script? Have you ever tried it?

50. Why should the teacher write well and rapidly upon the blackboard?

51. Discuss: The main thing is the tact, skill, and power to excite interesting related thought in the minds of the pupils. Is it possible to have intense interest of the part of pupils in every lesson?

52. What is meant by the "organic circuit"?

53. Is it necessary to give children writing lessons if they write every word they learn in reading and afterwards write original sentences freely?

54. How can writing be made an effective means of teaching reading?

55. Why is the blackboard the best means of beginning the first steps in writing?

56. Discuss: Slow writing cannot be the expression of immediate thought.

57. What is the educative value of rapid writing?

58. Is it possible to teach spelling, punctuation, capitalization, by the writing of original sentences?

59. What is meant by sinking skill in writing into the automatic?

60. How may writing be made an efficient means of mental development?

61. What is the function of speech and writing in education? What relation have speech and writing to each other?

62. How should rapid writing be used in all recitations? Of what use is the preservation of written work?

63. Have you learned to write well upon the blackboard? How much practice have you had in writing?

64. What is the educational value of grammar?

65. What relation has grammar to philology and psychology? Is it true that English is a comparatively grammarless language? How should grammar be taught? What is the old method of teaching grammar?

66. Should grammar be made an essential factor in all teaching?

67. How should incorrect habits of speech be changed?

68. Should a child ever be allowed to see or hear a wrong form of language?

69. Why should the teacher use correct English?

70. When should the accidents of grammar be taught?

71. What is the use of parsing and analysis?

72. What is the economy of the plan of Concentration in teaching grammar?

73. What is oral reading? What is the difference between reading and oral reading? What is the difference between oral reading and speech?

74. Discuss the development of motive in oral reading.

75. What should be the standpoint of grammar in oral reading?

76. Discuss: The demand for oral reading should be a demand for intensity of thought action.

77. How can unity of action be preserved in oral reading?

78. Discuss: The most serious fault in teaching reading consists in making oral reading an end in itself.

79. Is it possible to preserve the child's beauty and perfection of speech?
80. How can this be done?
81. What is the main fault with most methods in teaching reading?
82. What are the most important rules to be observed in teaching oral reading?
83. What is the value of questioning?
84. What improvements should be made in methods of teaching reading?

Chapter XIV.—School Government and Moral Training.

1. What is the purpose of a school? What is meant by educative work? What is school order? Of what does the process of education consist? What is method?
2. What is teaching? What is training?
3. What is the value of the community life in school to the child?
4. How may all the rules of order in school come under the motto: "Everything to help and nothing to hinder."
5. What is the best test of order in school?
6. Should children be allowed to whisper? Why? Why not?
7. What is the perfect ideal of order?
8. How should the initial steps in preserving order be taken?
9. What is the highest qualification of a teacher?
10. What is the value of a teacher's skill in order?
11. What is tact?
12. How does courage manifest itself?
13. Discuss: A teacher should never lose a moment's time in trivial things.
14. Discuss: Order limits personal energy to educative work. What is educative work?
15. How can a teacher ascertain what is most needed by a pupil?
16. Why should a child study history? Is the proper study of history moral?
17. What is patriotism? What is the best kind of patriotism?
18. By what should a teacher be governed in selecting subjects in history?
19. What is the educational value of history? Of biography?
20. Is history when taught an essentially moral study?
21. Why should children study science?
22. What subjects in science should a child study?
23. What should govern the selection of subjects for study in science?
24. Is science an essentially moral study?
25. Is the search for truth moral?
26. Does science cultivate the imagination? Does science cultivate the love for truth? Does science train children to accuracy of thought?
27. Is the study of God's work a study of God Himself?
28. Which study is the better for the development of morality—history or science? Why?
29. What is civics? How should civics be taught? Are all the means for the elementary study of civics present in the schoolroom?

30. Discuss: The true study of civics is the development of the altruistic motive.

31. What is the educational value of class recitation?

32. Discuss: The chief function of the teacher is to watch the action of his pupils' minds.

33. Discuss: A teacher who is a genuine student will receive far more from his pupils than he gives.

34. Is reciting for a mark or per-cent immoral? Why? Why not?

35. Discuss: All class recitation should lead to independent study on the part of pupils.

36. Is it true that the social factor in education stands far above all factors, higher than principles, methods, subjects, and even the teacher?

37. Why cannot children be educated at home?

38. What is democracy?

39. Is democracy possible without the development of the altruistic motive?

40. What relation has the common school to the home and the church?

41. What advantages has the common school over all other kinds of schools?

42. Discuss: Ethical life is ethical action.

43. What is the motive of Sloyd?

44. Discuss: Art is truth telling.

45. Should all acts of expression be genuine and honest? Are all genuine and honest acts of expression ethical?

46. Discuss: Every demand for expression is a demand for the discovery of truth.

47. Is it true that all educative work is interesting; that no one can ever study anything that is good without loving it?

48. Discuss: True order and moral training are one and the same.

49. Was the human being created to be moral?

50. Are there original tendencies toward morality in every human being?

51. Discuss: Education consists entirely in the presentation of conditions for the exercise and outworking of moral power.

52. Discuss: Education is the outworking of the design of God into highest character.

53. If this hypothesis is true, is it not just as true that all true teaching is intrinsically moral?

54. Is an unnatural method immoral? Why? Why not?

55. What is the relation of intellectual and moral power?

56. Discuss: All growth is by the laws of God.

57. What is method? Is natural method moral?

58. Discuss: All education consists in the cultivation of the altruistic motive.

59. If a person is governed by the altruistic motive why will he take the greatest care of his body? Why will he persistently strive to gain knowledge?

60. What knowledge is needed for the education of man? What not needed?

61. Explain: Seek ye first the Kingdom of God and His Righteousness, and all things will be added unto you.

62. How can love for others be cultivated in the schoolroom? Which can be cultivated the easier—love or selfishness?
63. Is it possible to cultivate neither?
64. What is the meaning of the sentence, "The truth shall make you free."
65. Discuss: Every step onward in civilization is dependent upon finding and applying the truth.
66. Discuss: No human being can find the truth for another.
67. What is meant by "Work out your own salvation"?
68. Is reasoning the supreme faculty of being?
69. Discuss: Nothing but the right should ever be presented to the child.
70. If right is always presented to the child, how will the child know that which is wrong?
71. How can good and pure taste be cultivated?
72. How are the Chinese detectives of counterfeit coins trained?
73. What is the will?
74. Discuss: Every act of the ego is an act of the will.
75. What is the educational value of the training of the will?
76. Discuss: A strong will is not in itself moral.
77. What is attention?
78. Can all acts under each mode of attention be intrinsically moral?
79. Can the highest discipline be acquired by educative acts? Why should a child always read pure literature?
80. What is the moral value of each and every mode of expression?
81. What is imagination?
82. Is it true that all acts of imagination should be moral?
83. What is emotion?
84. What action of the mind produces the highest emotion?
85. What relation has emotion to thought? What relation has emotion to morality?
86. What is original inference?
87. What relation has it to facts?
88. Discuss: Self-effort in making original inferences is the highest quality of mental action.
89. What is meant by quality of mental action?
90. Do children take a pure delight in the search for truth? How much experience in this direction have you had in your school course?
91. What is self-conceit? What effect has self-conceit upon the mind?
92. Are unnatural methods immoral?
93. Is corporal punishment wrong? Which is the worst mode of discipline—corporal punishment or the giving of prizes and rewards?
94. How do teachers often neglect to train the wills of children?
95. What is the moral effect of subjecting pupils entirely to the teacher's will?
96. What is the effect upon pupils who have always been abjectly subservient to a teacher's authority?
97. Why should children have opportunities to choose for themselves?
98. What should be the limit of such choice?
99. When should the teacher's will be the pupil's will? How long should this continue?
100. Discuss corporal punishment.

101. Discuss prize and reward giving.
102. How is selfishness systematically cultivated?
103. Should ambition in children be developed?
104. Discuss: The apparent necessity for corporal punishment and reward-giving springs from imperfect teaching.
105. What is the effect of prize-giving upon a bright child? Upon a dull child?
106. Is it possible to present plenty of educative work that children love to do and will do without punishment or reward? Why? Why not?
107. Discuss: Corporal punishment and reward-giving are a substitute for ability on the part of the teacher.
108. Can character be measured by a per-cent? Why? Why not?
109. Discuss: Children's souls are starved to death while the universe is the bread of life. Also: The fundamental reason why children do not act right is because they do not have the conditions for right action.
110. Discuss: Educative work presents its own reward.
111. What is the difference between a scientific truth and a sacred truth?
112. Discuss: There is but one study and that is the study of law.
113. Discuss: Every text-book used should be a text-book of morals. Is there any necessity for text-books limited to the discussion of morals?
114. Are all acts of education intrinsically moral? Should all text-books be text-books upon morals? Does imperfect teaching have an immoral tendency?

Chapter XV.—Summary of the Doctrine of Concentration.

1. Discuss, point by point, the summing up of the Doctrine of Concentration on pp. 358–366.
2. What is the centre of all education?
3. Define education.
4. What is the central law of education?
5. What is the fundamental principle of education?
6. What relation has motive to education?
7. What relation has will?
8. What is original inference?
9. Discuss: The universe is the manifestation through matter of all efficient energy.
10. What is the goal of self-effort?
11. Discuss: Everlasting convergence is the law of approach to central truth.
12. Discuss carefully: There is but one study, and that is a study of law
13. Is man an instinctive believer in law?
14. What should be the rule of adaptation of subjects to development?
15. Which subject is best adapted for the first steps?
16. Is science or history preferable? Why?
17. Does a child begin all the central subjects instinctively?
18. What is the effect of Nature upon the child?
19. What is "suspended judgment"?
20. Is it true that creation is going on to-day?

21. Discuss: The more exalted the art the more difficult it is to understand its principles and apply them.
22. What is the method of quantity?
23. Discuss: Under the method of quantity, the "Three R's" and a little geography and history are all-sufficient.
24. What is the difference between the method of quantity and the method of quality?
25. Discuss: The art of teaching consists in the ability to guide self effort in the direction of original inference.
26. What is the main reason why pupils know so little after having studied so much?
27. Discuss: Take care of the quality of mental action and quantity will take care of itself.
28. Why do teachers stop studying?
29. How should teachers change methods and devices?
30. What is the chief value of the doctrine of Concentration?
31. What is meant by tentative steps in applying this doctrine?
32. Discuss: The doctrine of Concentration presents teachers an economical means of persistent study.
33. What is the source of enthusiasm in teaching?
34. How are subjects isolated in school-work?
35. Discuss special teachers and departmental teaching.
36. Why should a regular teacher have control of all the subjects taught to his pupils?
37. Is it possible for departmental teachers to understand the characters of children?
38. Is it true that the study of special subjects narrows the mind?
39. Discuss: The pre-eminent virtue of Concentration is the economy of mental power.
40. What are Courses of Study? What is their use? When should they be revised?
41. Tell what you know about the Herbartian theory of Concentration. Who was Herbart? Who were his principal disciples?
42. What are the essential differences between the Herbartian theory and the theory here presented? Which is preferable? Why?
43. Present a summary of objections to the theory of Concentration. How much experience have you had in its application?
44. The best thing about the theory of Concentration is that it presents a working hypothesis for prolonged and profitable study. Discuss.

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